Popular Woodworking

Issue 50 August/September 1989 $3.75

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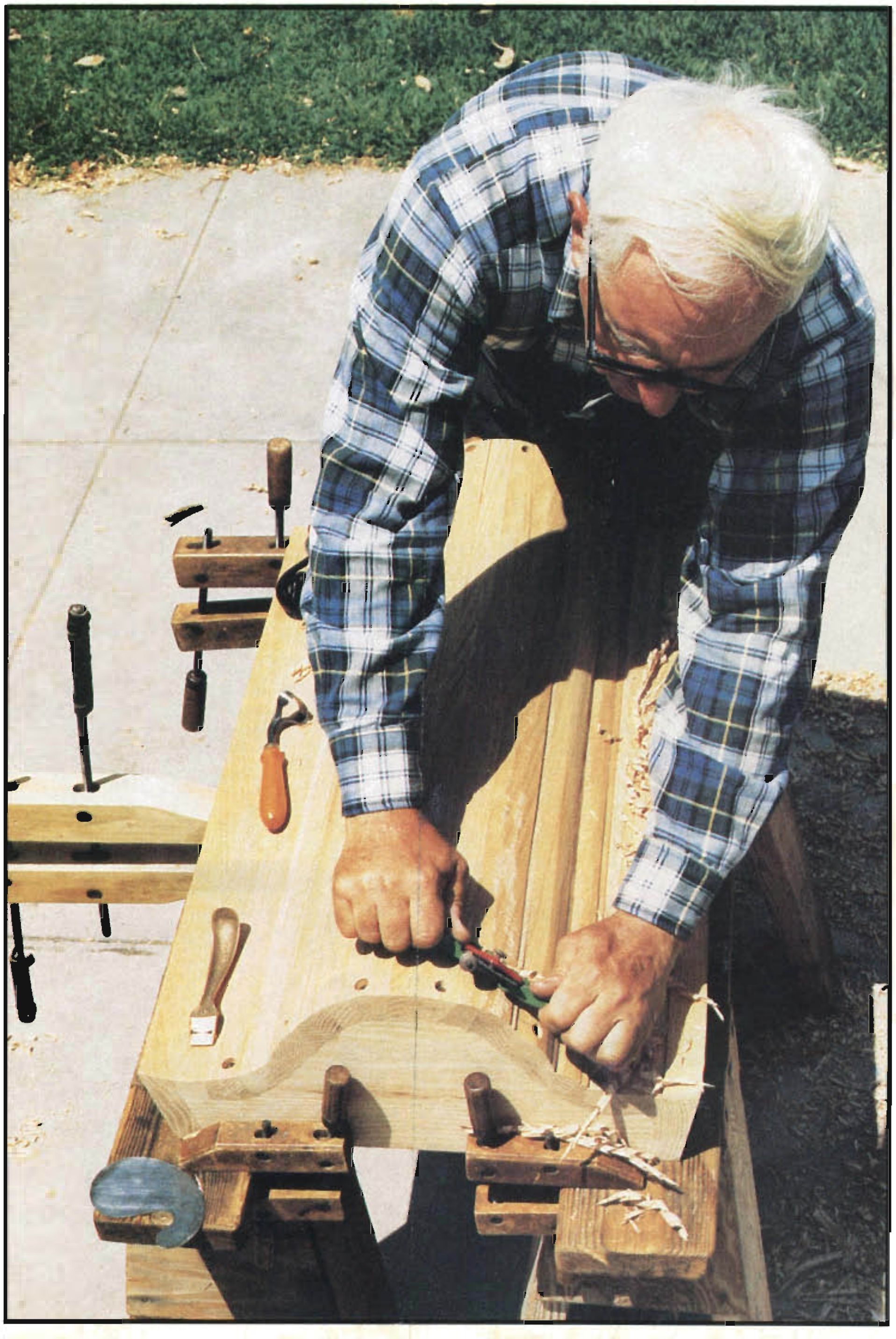

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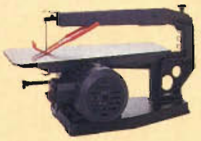

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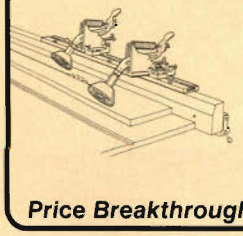

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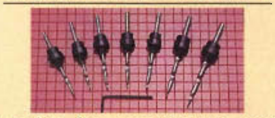

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Popular Woodworking

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On the Cover

Mary Jeanne Asa

Warren Asa smoothes the top of his oak pirate chest with a spokeshave. This delightful project isn't as difficult as it looks. Improvisation is the key to bevelling the slats for the top. You'll find a full–size pattern for the end pieces bound into the center of this issue (that's right, you don't have to send away for it) and complete instructions for the project on page 56.

Clear Cuts

I was watching Norm's show on PBS (one of the best things on television).They were showing a closeup of a certain table saw procedure. It's a dramatic shot, actually. The camera starts out high, sort of following Norm around at shoulder–level. Then, as the wood makes smooth contact with the table and fence, the camera swings over and drops—zooming in on the front edge of the blade just as the material makes contact. Then, as certain as his cut is true, the bright message comes crawling across the bottom of the screen: "Guard removed for photographic clarity. Safety guards should be used."

Ah, the things we do in the name of photographic clarity. Never mind that it would be impossible to make that particular cut with the guard in place.

PW should probably run such a disclaimer with some of the photos we publish. We should do so for safety purposes, just like they do on *The New Yankee Workshop:* to cover our as... ...selves. We probably will.

My high school shop teacher kept the table saw guards handy: next to the machine with the wrenches and blades. He jokingly told us to put them on the machines only if someone from the administration building was on their way over. And, that was really only if they were bringing a lawyer with them.

He said the guards themselves were a safety hazard. Speaking for those guards and those machines, he may have been right. I know I never saw an injury that resulted from the absence of a guard.

I do not mean to say that *PW* is recommending you not use your table saw guard. We *can't* say that.

I'd like to hear how you feel about the subject, though. I'd especially like to hear from those who swear by the guard. Are there aftermarket guards that are as worthwhile as aftermarket fences? Any shop–made versions that do a better job? Write in and let us know. It goes without saying that shop safety is an essential concern—even to big–time TV stars.

Random Notes: If you're looking for Part 2 of Alan Marks' feature on computer–aided furniture design, stay tuned; you'll find it in the October/November issue.

I'd like to welcome Assistant Editor Phil Fischer to our staff. Phil's been messing around with wood for years, but his previous day job was as a high school English teacher. He had planned to add a second story to his house during summer break this year but decided to forgo those plans to come join us at *PW*. I'll be teaching him my loooong–term remodeling approach.

Welcome also to Ginny Pruitt and Sue Fullmore. Ginny helps with pasteup and illustrations (see pages 66-70), and Sue helps with circulation and advertising chores. Both brighten the offices considerably.

David M. Camp

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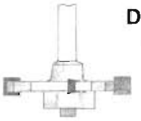

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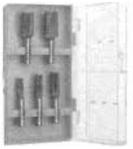

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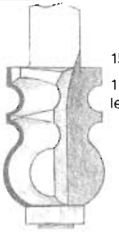

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MODEL	CUTTING DIAMETER	PRICE
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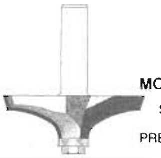

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1-5/8" Cutting length

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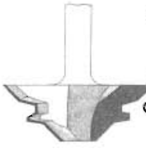

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G1410	1/4"	$10.95
G1411	3/8"	$10.95
G1412	1/2"	$12.50

1/2" SHANK

MODEL	B CUTTING LENGTH	PRICE
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G1414	1/4"	$10.95
G1415	3/8"	$10.95
G1416	1/2"	$12.50

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MODEL	A CUTTING DIAMETER	PRICE
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1/2" SHANK

MODEL	A CUTTING DIAMETER	PRICE
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G1403	1-5/8"	$14.50
G1404	1-3/4"	$18.50

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1/2" SHANK

MODEL	r RADIUS	PRICE
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G1408	1/2"	$13.95

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1/2" SHANK

MODEL	r RADIUS	PRICE
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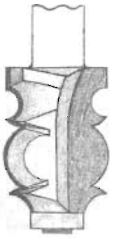
FACE MOULDING BIT



1/2" SHANK

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1-3/8" Cutting length

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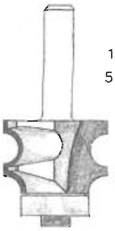
G1385	1/2"	$5.95
G1386	1/2"	$6.95
G1387	1/2"	$6.95

FACE MOULDING BIT



1/4" SHANK

15/16" Cutting dia.
5/8" Cutting length
5/16" Bead

MODEL G1369
$19.50

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Letters

Popular Woodworking welcomes your comments, pro or con, about articles we publish. Send your letters to: Editor, Popular Woodworking, 1320 Galaxy Way, Concord, CA 94520. Letters may be edited for publication.

Interest in Boring Tools

I have long been a subscriber to *Popular Woodworking*, and I especially enjoy the articles on old tools by Graham Blackburn. However, I couldn't help but notice a few errors in his article on boring tools in the December/January 1989 issue. They are:

1. While bits for the Stanley push drill rotate in both directions, they cut (and should be ground with clearance to cut) on the push stroke only. There is little pressure on the bit on the return stroke, and no cutting action.
2. I have never seen a nut auger with a flange or bolster, and could not find one in any books or catalogs. If the square shank of a nut auger is even slightly loose in its wooden handle, it will soon ream out the handle. The way to prevent this is with a tapered shank that is always pulled tightly into the handle by the nut; a bolster would not allow this.
3. I have never seen a boring machine with a feed mechanism. They usually have withdrawal mechanisms, but not feed. Blacksmiths' post drills have feed mechanisms.
4. The beech–and–brass brace illustrated is a plated brace, not a framed one. The terms are not interchangeable. In the brass–plated brace, the brass plates strengthen the wooden frame. In the brass–framed brace, the frame is of cast brass, and the wood infill is mainly decorative.

While talking about hand and breast drills, I was surprised he didn't mention the more complex ratchet drills, such as those by North Brothers. These allow the handle to ratchet in either direction, lock the chuck to make bit changing easier and, in the double ratchet setting, will turn the bit in one direction regardless of which way the handle is turned. Still, it was a good article.

John Martin
Cumberland, ME

The author replies: *While it is true that there is little pressure on the bit during the return stroke of a Stanley push drill, the cutting edge of the bit is formed by a simple flute ground along both sides in such a way that, in effect, there is indeed a cutting edge on both sides and a certain amount of cutting does occur. If the bit were ground so that only the leading edge cut, it would be very difficult to keep the bit centered in any hole—with the result that the bit would tend to bind and turn with difficulty.*

Your points concerning the nut auger, boring machine, and plated brace are true and well taken. Of the several nut augers I own, the single example with a bolstered shank has indeed had the inside of the handle reamed out and shows evidence of past owners having made attempts to refill the hole and tighten the nut and washer ever more securely to the point where they are now deeply embedded in the top of the handle. This was obviously not as successful a design as the commoner form you describe.

By feed mechanism on the boring machine, I meant to refer to the beveled gears on the cranks and the bit holding mechanism that drive the bit. It is, of course, only the pitch of the lead screw on the tip of the auger that determines the rate of feed of the bit. The confusion between framed and plated braces deserves to have been pointed out and, as mentioned at the end of the article, warrants a separate article covering this enormously interesting area of old tools.

Graham Blackburn
Rio del Mar, CA

The Shop File Files

I read with interest Hugh F. Williamson's Shop Filing System ("Tricks of the Trade," *PW* #48, April/May 1989).

I use a loose–leaf binder with the name of the magazine labeled "projects" and another labeled "how–to." I use the tabs you can purchase at any stationery store, making it easy to find each publication's projects and how–to.

Above all else, it's nice, on a cold winter's night to grab a bunch of magazines, a large cup of hot chocolate and enjoy going through them again. You may even find something you overlooked before.

David Eckel
Syracuse, NY

Regarding Hugh Williamson's "Shop Filing System," I have a suggestion: Why not have your advertisements physically separate your articles so the tail end of one does not fall on the same sheet as the start of another?

That way when articles are removed for filing it saves us shop nuts from making a special trip to the photocopier.

Todd Effren
Brooklyn, NY

There are several reasons why this would be impractical for us to do. First of all, we are limited in terms of the locations of color pages because of the way the magazine is printed; if we want to use color, we can only use it on certain specific pages. Getting color ads and color editorial pages to all wind up in the right place would be almost impossible.

Secondly, the ad pages are firmed up at the very last minute. It takes a full two months for the editorial department to prepare its material, so we lump it all together in the middle of the magazine, then when ad sales are finalized we put together the front and back of the magazine, filling in the space between the ads with our departments (Book Reviews, etc.). There just isn't enough time between the ad closing date and the issue deadline to allow for rearranging everything.

Editor

High-Tech Pragmatism

Peter Good seems to have a problem with the word "Technology" ("Truly Low–Tech Woodworking," *PW* 48, April/May 1989). I, too, have been tinkering with woodworking for several years, and although I haven't achieved museum–display quality, I certainly believe in the axiom "use the right tool for the job." My workshop is not a high–tech factory, but I make furniture and other useful and marketable products with the "proper tools." Mr. Good seems to derive a sense of arrogance from his insistence that he can do it just as well as someone

2+2 Raised Panel Cutters

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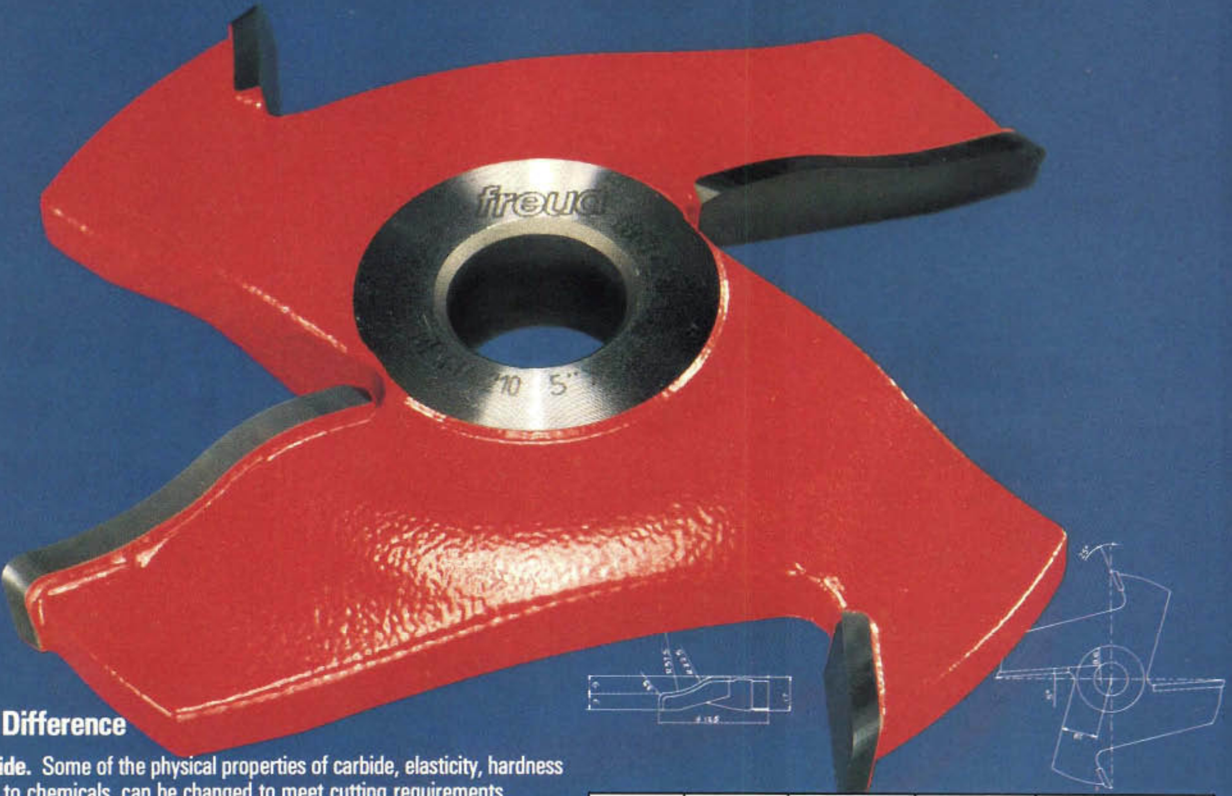


The Freud Difference

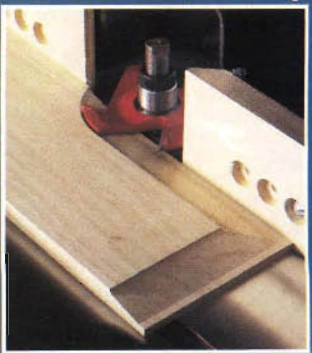
Superior Carbide. Some of the physical properties of carbide, elasticity, hardness and resistance to chemicals, can be changed to meet cutting requirements.

To ensure the shaper head you buy has the best carbide qualities for its purpose, Freud produces special blends at its own factory. Through a combination of robotic and computer monitoring each batch is checked to assure purity and quality.

Advanced CAD System. The Computer-Aided Design System simulates actual cutting conditions in three dimensions and records the blade performance. This allows Freud engineers to electronically vary the material being cut and the blade's physical characteristics to develop saw blades that provide optimum cutting performance.

2 + 2 = Perfect Raised Panels

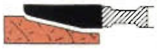
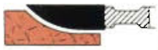
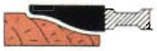
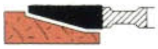
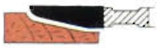
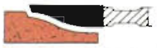
For the cleanest, smoothest raised panels, use Freud's 2 + 2 raised panel cutters. Two different sheer cutting angles produce clean, sharp surfaces on either hard or soft wood and create the quality finish you expect.



Creates crisp, clean edges and surfaces.

With a downward cutting angle, the smaller carbide wings slice the wood fibers, creating a sharp edge for the center panel. The larger carbide wings, used to raise the longer flowing profile, use an upward cutting angle to cut along the diagonal of the grain. This produces a soft, smooth finish.

Freud's computer-balancing technology ensures smooth, safe rotation on cutter spindles and maximum performance from the cutting edges. And, the bright red color makes cutters easy to locate.

Stock #	*Standard Bore	Cutter Diameter	Stock Thickness	Profile
UC202	$^{3}/_{4}$ Inch	$4^{15}/_{16}$"	$^{5}/_{8}$"	
UC209	$^{3}/_{4}$ Inch	$4^{15}/_{16}$"	$^{3}/_{4}$"	
UC210	$^{3}/_{4}$ Inch	$4^{15}/_{16}$"	$^{3}/_{4}$"	
UC211	$^{3}/_{4}$ Inch	$4^{15}/_{16}$"	$^{3}/_{4}$"	
UC212	$^{3}/_{4}$ Inch	$4^{15}/_{16}$"	$^{3}/_{4}$"	
UC213	$^{3}/_{4}$ Inch	$4^{15}/_{16}$"	$^{3}/_{4}$"	

*1/2" Bushings provided.

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with more modern equipment. I find it difficult to believe that a businessman/woodworker would tie his hands just to prove that "what works, works."

Yes it works, but just how efficiently? Every tool in my shop is there for a purpose. I can't afford every high–tech gadget that's on the market, but I use each tool the way it was designed to be used. Tools are nothing more than a method to achieve a singular goal: to produce a finished product that is useful and, at the same time, provide a sense of satisfaction to its creator.

I agree with Mr. Good in that "it's not so much the equipment you use as the technique." That's very satisfying to the pragmatist who satisfies his primal needs by creating ornate furniture with a butter knife and a screwdriver (and maybe a large box of bandaids). But I find it hard to believe that as a craftsman who manufactures custom doors, he would be satisfied to produce his wares on a "hobbyist" scale. Where is the entrepreneurship, the business acumen and particularly the common sense? So–called "high–tech" equipment would provide him the luxury of producing his wares in far less time than by his antiquated methods. The machines would surely pay for themselves in very little time and give Mr. Good the extra time to figure out more ways to use his father's screwdriver.

I don't have any problem with Mr. Good's basic premise, but I have a big problem with a businessman that won't wake up to modern production techniques that would increase his ability to manufacture more and still produce high–quality merchandise. Somewhere along the way you must put into perspective the essential idea of product and pragmatism.

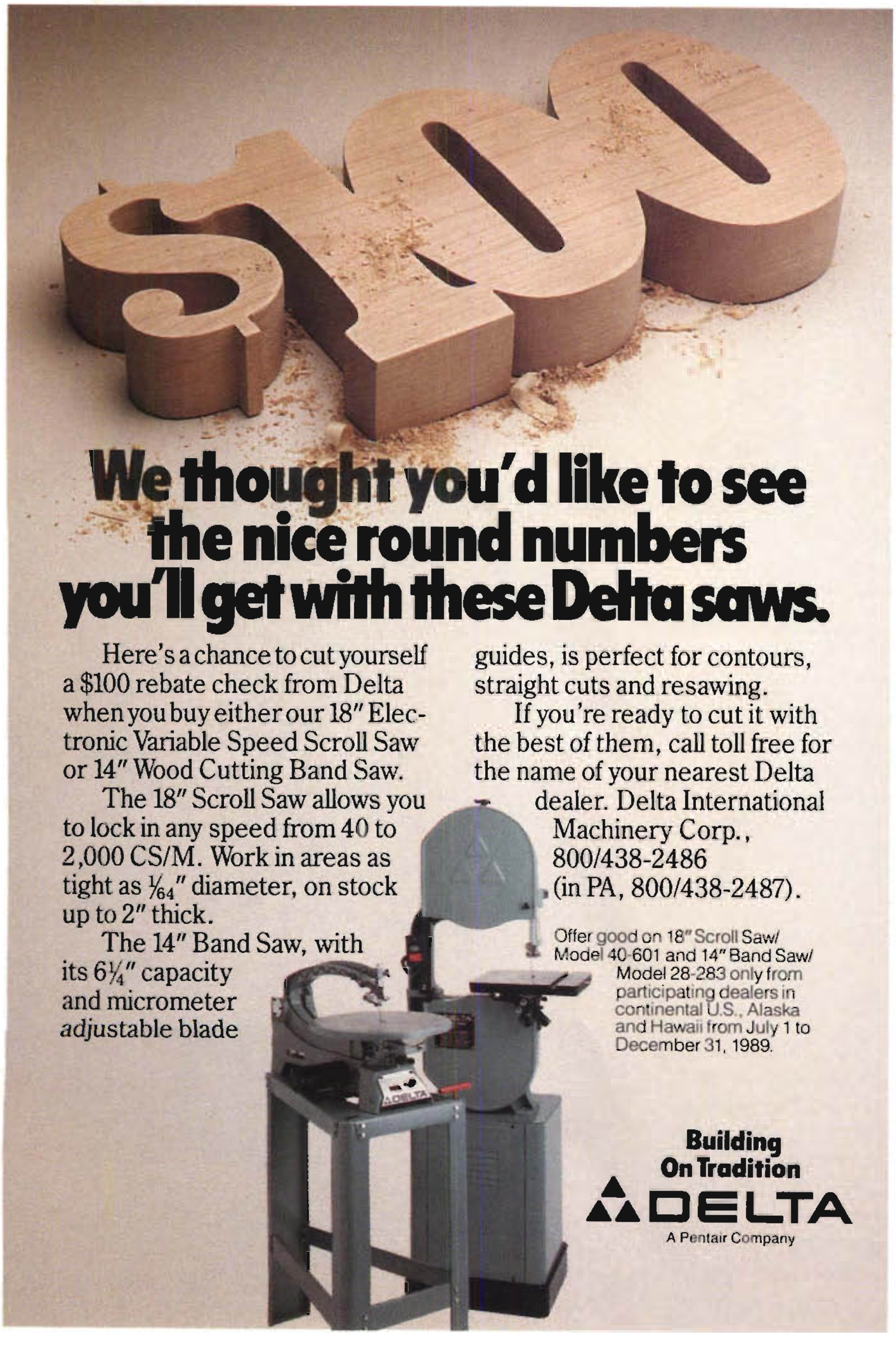
Thank you for letting me get this off my chest. I take a lot of pride in my avocation. Perhaps it's "pride" that is lacking with Mr. Good?

Gary L. Ward
Phoenix, AZ

The author replies: *Perhaps I should start by saying that I don't actually "tinker" with woodworking. I've been a successful professional woodworker for 19 years. I also take great pride in my work and have many devoted customers who will readily attest to the quality of my work.*

The "right tool for the job" is sometimes a matter of opinion, which in turn may be based on experience. Many procedures in woodworking can be done by several very different methods. Tenons, for example, can be made using four cuts on a band saw, four cuts on a table saw, a series of cuts using dado blades on a table saw, a router with a straight bit, a router with a spiral bit, an industrial tenoning machine, or hand chiseling. In the right hands, all of these tools will produce results of nearly equal quality, in nearly the same amount of time, and all will be perfectly functional. But different people use different methods, and that's OK. I routinely cut hinge mortises in doors with a router, but I know another "door man" who does the same operation with a hammer, chisel, and mortising plane with equal results in the same amount of time.

I've also been in the shops of a number of renowned woodworkers and have wit-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nessed their use of some tools and methods which you would, no doubt, be appalled by. I'm talking about homemade machinery and tools that bear a close resemblance to randomly found objects. The dean of woodturners, Bob Stocksdale's principal piece of equipment is a homemade lathe which he rigged up partly by using spare parts. His first lathe was operated by a washing machine motor. Bob's turning is done almost exclusively using a single 1/2" gouge, and his tiny basement shop has ceilings that are so low you have to duck, and part of the floor is dirt. Sam Maloof's overcrowded shop, where you have to pick your way around disorderly piles of miscellaneous materials, looks more like a garage before a garage sale, and a piece of folded–over sandpaper is one of his most important tools. Using what many people would consider low–tech tools and methods, these craftsmen, who are at the very top of the field, produce stunningly beautiful pieces of woodwork with reasonable efficiency and without a great deal of effort. In the case of Roy Underhill, author and star of the highly successful "Woodwright's Shop" series on PBS, a whole career (and a very good one at that) was built on low–tech tools and methods.

Don't get me wrong; I certainly advocate the use of tools and methods that do a good job, safely, efficiently and in a timely manner. For example, I am a great fan of air–operated tools and use them daily. I operate in a premium 5,000–square–foot shop equipped with, among other things, a 12" table rip saw, a 12" rolling-table crosscut saw, 10" table saw, 12" jointer, 12" planer, 24" planer, very large band saw, 16" disk sander, 48" edge sander, large drill press and a central dust collection system, all of which is industrial–grade machinery.

Many woodworkers, particularly those who are just starting out, may not be able to afford some of what you refer to as the "proper" tools and equipment and, out of economic necessity, may have to do the job in a lower–tech way. There may even be an advantage to this because to make the lower–tech tools and methods produce a quality result, you have to develop a greater degree of skill and a more sensitive feel for the material to make up for the lack of precision or efficiency in the tool. Quite possibly, this makes a more proficient craftsperson. Bear in mind that much of the woodworking machinery in use today—particularly at the industrial level—was developed so that consistently high–quality results could be produced rapidly by operators with lower levels of skill and experience. Some of the best machinery works so well that any klutz can obtain good results using it. In this case, is the operator a woodworker, or just a button–pusher with little or no skill?

I'm not a woodworker who, as you put it, "creates ornate furniture with a butter knife, a screwdriver and a large box of bandaids." I'm not quite that good. But I can, if need be, produce a fine frame–and–panel entry door with mortise and tenon joints, raised panels with beveled or coved edges and raised decorative mouldings around the panels using nothing but a table saw, belt sander, orbital sander, a half–dozen pipe clamps and a hammer. Starting with rough lumber, I could complete the project in less than a day. With no additional equipment, I can also make the panels with arched tops (think about that one for awhile). I don't usually do it with this little equipment, but I can.

Stop in at my shop sometime. We'll have a beer and maybe I can show you a couple of nifty tricks. For instance, I could tell you about how I make one–piece laminated elliptical mouldings and picture frames. I get perfect results using any old table saw and router table, a hammer and a few nails. You'd be shocked.

Peter Good
Oakland, CA

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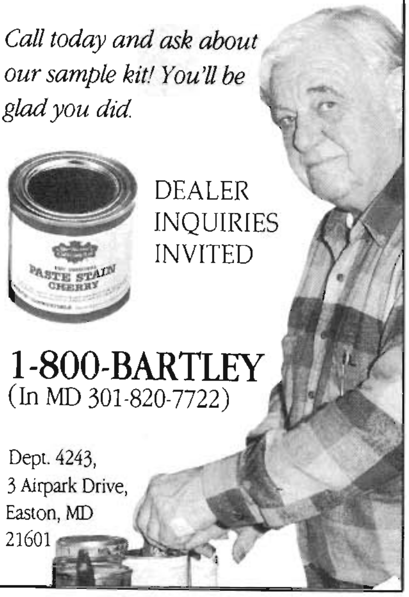

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Vise Arrangement

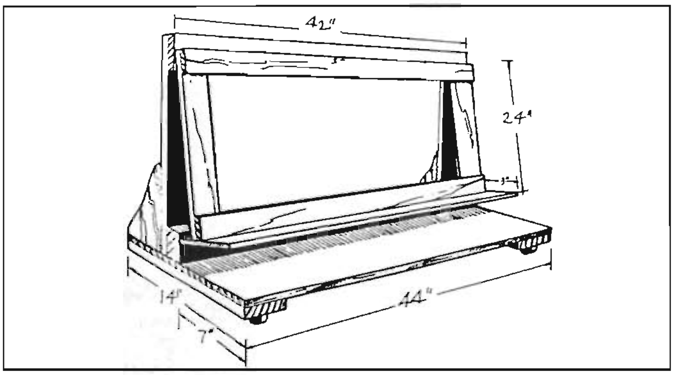
In my first (tiny) shop I built a 6'–long workbench and mounted a carpenter's vise on the left end. However, besides woodworking I did some wood carving and also worked in bone and metal, so I needed a machinist's vise. I mounted a hefty model on the right side, positioning it so that the permanent jaw would be in perfect alignment with the carpenter's vise. It was one of the smartest moves I ever made. I could clamp long boards in both vises providing great stability for sawing, planing, drilling and carving. I padded the jaws of the machinist's vise when necessary. Some may argue that a machinist's vise has no place in a woodworking shop, but my workbench had to provide facilities for all of my interests and this arrangement worked perfectly for me. I'm still using this bench in the same way in my larger shop 40 years later.

Warren Asa
Glendora, CA

Plywood Transport

The passage of time has made it increasingly difficult for me to lift and carry large sheets of plywood around the shop. I came up with this device to remedy the problem. As shown, it is a simple cart with a hinged rack that tilts up to balance the plywood horizontally and swings down to easily move the material around the shop.

The only dimension that really matters is the 24" width of the rack. Hinge it to the upright portion of the cart in such a way that it will be flush with the top when in the horizontal position. With the weight of the plywood balanced on its center, it requires very little effort to lift it up or down. Now I slide the material out of its rack and onto the cart, tip it down to roll over to the table saw, and tip it back up again to present it to the machine at the right height.



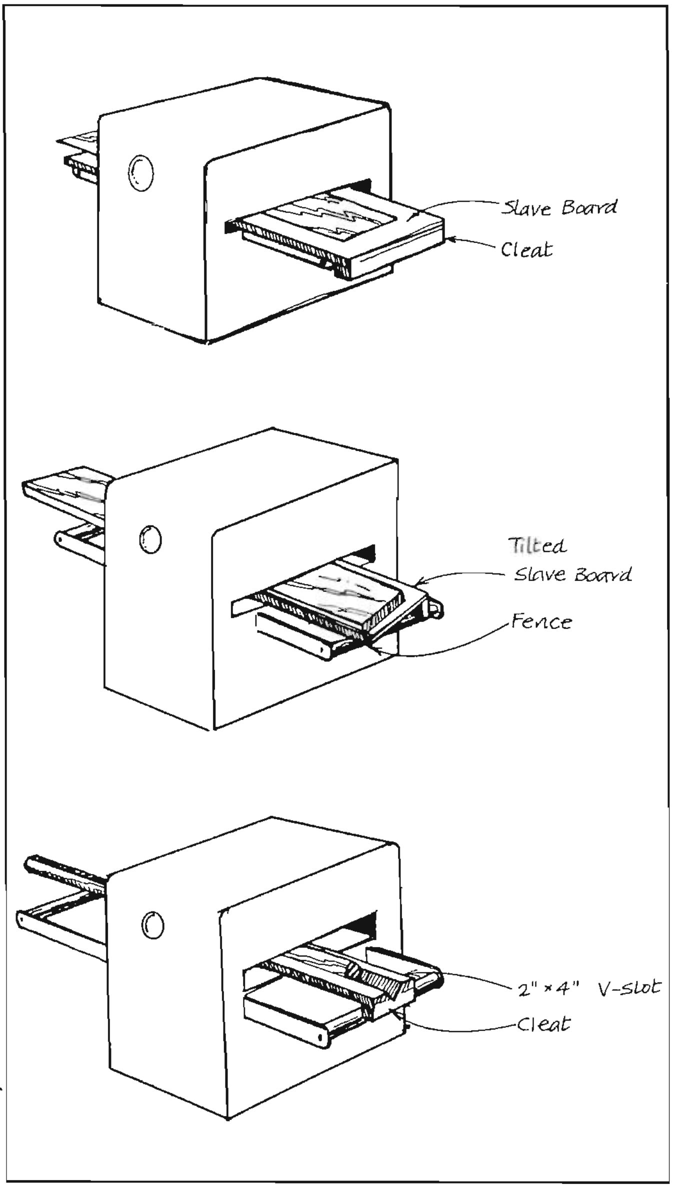
John E. Leeds
Ojai, CA

Planer Tricks

Even the planer can be jigged for special operations. If you want to plane stock thinner than the bed will allow, make this "slave board" from a plastic–laminated sink cutout. Cut it to the width of the feed tables and long enough to reach at least to the outfeed rollers, and apply a cleat to the bottom to stop it against the infeed table. With this setup, you can make your own veneers down to about 1/16" thick.

A slave board made from a 2 X 4 with a V–groove cut in the top and a cleat on the bottom makes it possible to mill a flat surface onto round stock for use as drawer pulls, etc.

One time, I had to duplicate some tapered house siding that was no longer manufactured. I made a slave board that was the width of the siding and had material under one edge to tilt it up into the cutter head at the proper angle. A fence along the other edge kept the stock from sliding down as it was being milled.



Illustrations by Graham Blackburn

Don Kinnaman
Phoenix, AZ

Octagon Picnic Table

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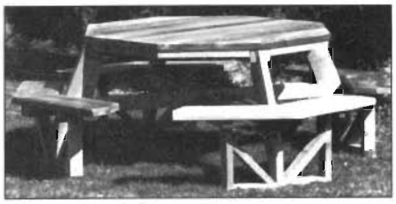

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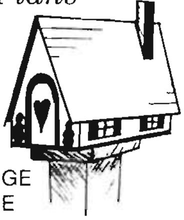

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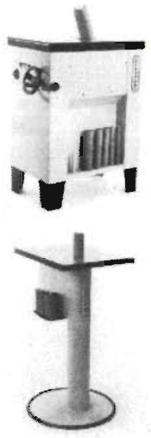

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Book Reviews

by Hugh Foster

The TAB Handbook of Hand and Power Tools by Rudolf Graf & George Whalen, © 1984 (TAB Books, Inc., Monterey Lane, Blue Ridge Summit, PA 17214) 501 pp., paperback, $17.95

This book makes an excellent one–stop guide for novice craftspersons who are choosing their first tools. The introduction to the hand tool section is one of the most sensible two–page essays I have read. Besides describing what's ahead and advising that few projects will be described, it gives a quick history of hand tools pointing out that their use has continually increased humans' ability to think.

Before taking a look at the tools themselves, the authors discuss several points about the attitude that leads to safe work. Taking this section to heart and applying it to our ways and works could possibly put many doctors out of business. Since Chapter One wisely admonishes us that sharp tools are the safest tools, Chapter Two takes up methods of sharpening. Then the real business of the book begins: twenty–six more chapters discuss every conceivable type of tool. Woodworking tools are examined, to be sure, but so are tools for sheet metal work, electrical work, masonry, plumbing, sewing, kitchen, and even yard work. The book would represent an honest value even if it included *only* hand tools, but it ranges far beyond the workbench.

Most of the book is devoted to power tools. The authors describe which features are helpful and which are just fluff in common workshop tools, from simple drills to much more complex devices. Besides woodworking tools, devices like welders are discussed. Branching out from strictly shop tools, the book considers chain saws, lawn mowers, cultivators, and even snow blowers. Proper use of these items might get us more shop time! Just about the only power tools not covered are the orb and scepter, but then those are used only by reigning royalty.

The second half of the book, like the first, contains a harvest of information. Ever a glutton, though, I wanted even more data about tool maintenance. Even though I try to be conscientious about maintenance, I don't know how, where, or with what to lubricate and adjust my machinery. As much as I like this book, I'd be even more delighted with one that shared that information.

Scroll Saw Handbook by Patrick Spielman, © 1986 (Sterling Publishing Co., 2 Park Ave., New York, NY 10016) 256 pp., paperback, $12.95

So many types of scroll saws are available today that a prospective purchaser might find it hard to know just where to start shopping. I have found myself in that situation more than once, and have thus far always given up on the notion of scroll sawing in my shop. Now I'll know how to shop for one the next time I'm smitten by the urge. Spielman takes us through the various kinds of scroll saws, both by type and by brand. Over half the book consists of thorough, informative, well–illustrated product reviews. This book doesn't tell you which type or brand to buy, but Spielman's explanations of the differences make it possible for you to make an informed judgment.

The second half of the book is devoted to sawing techniques. Some of the joinery that can be scroll sawn after a bit of practice is nearly incredible. I like to use dovetails in my work, and Spielman shows here a fine way to quicken their

---

Hugh Foster is an English–teaching woodworker in Manitowoc, Wisconsin.

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cutting.

A section on "Marquetry Basics" is very entertaining, especially the photos of Silas Kopf's very non–basic marquetry, which alone make the price of admission worthwhile.

Scroll Saw Pattern Book by Patrick & Patricia Spielman, © 1986 (Sterling Publishing Co., 2 Park Ave., New York, NY 10016) 256 pp., paperback, $12.95

With over 250 pages of scroll saw patterns and photographs of scroll sawn items, this book should be the scroll sawyer's delight. While there are only a couple of pages of actual text, those pages provided this reader with an insight into why most of my attempts to copy a pattern by the "grid" method have failed—and why my next effort won't. The craft items that he provides patterns for are the type that sell like hot cakes in my area. If you're wondering why you have that expensive scroll saw, this book may answer the question.

The Frugal Woodworker: Woodworking for the Beginner on A Budget by Rick Liftig, © 1986 (TAB Books, Inc., Monterey Lane, Blue Ridge Summit, PA 17214) 227 pp., paperback, $12.95

This book caught my eye because it looked like the sort of thing I love to hate. I had a vision: I would look at it for a few minutes and then pan it. My first impression was wrong, however, as I discovered while reading the brief biography of the author. Liftig is a dentist who loves woodworking because wood doesn't bleed, nor does it mind when he slips. I like a fellow who can look at himself with a wry sense of humor. Rick Liftig is also a fellow who has done some pretty decent woodworking in a pretty Spartan shop. His introduction shares the secret of his success: having a positive attitude.

Chapter One reminds us that we can go bankrupt buying tools. Demonstrating the truth of this, he points out that bankruptcy auctions are among the best places to buy woodworking tools. The most important tool in the shop, says Liftig, is the bench, and he advises you to save a bushel by making your own. He shows a bench plan that features a Black and Decker Workmate® as its main feature.

The only place he wouldn't have you skimp is on your wood. That makes sense. He says to learn to like plywood in the right places for the right reasons. Study the great designs of the past, and study Liftig's designs, too—they aren't bad. The book includes fine designs for attractive computer furniture. You may not find anything excitingly new here, but the book's refreshing tone sets it apart from the ordinary.

The Complete Book of Portable Power Tools by R. J. DeCristoforo, © 1987 (Sterling Publishing Co., 2 Park Ave., New York, NY 10016) 258 pp., paperback, $14.95

The author knows as well as you and I that this book is far from "complete," but novice woodworkers will appreciate his collection of clear, easy to read, well–illustrated material. DeCristoforo covers safe use of common tools, including the circular saw, saber saw, reciprocating saw, electric drill, router, belt sander, pad sander, disc sander/polisher, power planes, flexible shaft tools and other grinders, various battery–powered tools, and some unusual tools as well. In addition, he tells us how to fabricate stationary work stations for portable tools. For those with access to a fully set–up shop, whatever that is, this section won't make much difference, but, then, neither will the rest of the book. For the novice, however, these setups will help to ease the transition from beginner to expert tool owner.

The book also discusses lumber, panel materials, other wood products, abrasives, hardware, and shop math. These appendices consume nearly the last third of the book. While some of the coverage may seem superficial, the sections on hardware and shop math fascinated this reviewer, who found himself saying, "I didn't know that" so often that maybe the author should consider writing "DeCristoforo's Complete Book of Shop Math."

Cabinetmaking and Millwork, 5th Edition by John L. Feirer, © 1988 (Glencoe Publishing Co., 15319 Chatsworth St., Mission Hills, CA 91345) 992 pp., hardback, $39.95

This book, in its fifth edition, is still laid out like a textbook, and, like most textbooks, it regularly waxes dull. But that dullness isn't really much of a handicap, for the book is very comprehensive. I've had a copy of the 1977 revised edition since it came out, and it's one of the few books that lives in my shop, where it will, no doubt, be supplanted by the new edition. As is always the case with a gigantic work, there are parts—even of this new edition—that look outdated, but that is pretty easy to forgive. When I know so much that I don't have to refer to *Cabinetmaking and Millwork* a couple dozen times a year, I'll write a new one with all new photos.

Feirer's text is so fine that it's not likely to become outmoded in our lifetimes. If there's a copy of an older edition in your shop, you don't really need a new one, but if your shop doesn't have one, it probably should.

Fasten It! by Charles R. Self, © 1984 (TAB Books, Inc., Monterey Lane, Blue Ridge Summit, PA 17214) 293 pp., paperback, $14.95

More than half of *Fasten It!* applies more or less directly to woodworkers. The author opens his discussion with kinds of woods and plywoods, and the best methods for fastening each. He concludes that wood–to–wood joints with appropriate adhesives are the best wood fasteners. He reminds us that joints must be tight because it is the joinery, not the glue, that holds our projects together. A lengthy chapter shows even novice woodworkers how to make strong joints precisely and quickly. Even more interesting are reviews of various glue types, often by brand name.

Whether we are woodworkers because we are fairly handy, or vice versa, is as old a question as whether the chicken precedes the egg. My friends and relatives are convinced that I can fix anything; of course, I can't, but I'm forever trying—if only to keep from disappointing my loved ones. For this reason I found the rest of the book more interesting. I know of two fireplaces that *will be safer* because I have read Self's discussion of mortar, and that same discussion will permit me to lay some tile in a long–put–off project.

The chapter on metal fastening bears some resemblance to the catalog of Minnesota mail order hardware vendor, DRI Inc., but Self's descriptions of the various fasteners are more complete. Remaining chapters highlight soldering and welding, tapes, and other flexible fasteners ranging from hinges to rope. These closing chapters are little more than cursory treatments of their subjects. Where it is good, this text on fasteners is absolutely fine, but its weaknesses stem from the very fact that it is an ambitious work. They are forgivable because they merely represent instances of the writer's reach exceeding his grasp. If you read it thoughtfully, a great deal can be learned from this book, regardless of your fastening expertise.

Picture Framing Made Easy by Penelope Stokes, © 1986 (Sterling Publishing Co., 2 Park Ave., New York, NY 10016) 128 pp., paperback, $9.95

I wonder as I look at yet another book about picture framing why anyone would need a book that says basically, "Cut a 45° angle on each end of four pieces the right length and fasten them together." Of course, every author elaborates further, but still.... And then there's Ms. Stokes' book. Far and away the most complete book on the subject I've seen, this one treats the why and wherefore of picture framing as well as the how. After dealing with the different types of frames for different types of art, Stokes takes up matting, glassing, mounting, three–dimensional art, making the frame, assembling the work, and applying the backing.

Most importantly, however, she teaches us what to do when we screw up some part of the process. A musician friend of mine once told me that he plays quite a few wrong notes, but his professionalism permits him to "hide" them. The notion applies directly to Stokes' book. What separates it from others about framing is that she shares with us the "tricks" that make her frames better than average.

Industrial Drafting: Principles, Techniques, Industry Practices by John D. Bies, © 1987 (Macmillan Publishing Co., 866 Third Ave., New York, NY 10022) 530 pp., hardback, $24.95

The publication data omit an important fact about this book—the trade name AUDEL. That name alone should be sufficient to recommend it. This highly respected series has been around for decades, but this young author manages to bring new light to his subject. Rather than open with a rehash of basic drafting, Bies overviews professional drafting room practices, equipment, and techniques. Guidelines for lettering, sketching, and instrument drawing follow, as does a review of geometry and trigonometry. In treating the various types of projection, he discusses the theory as well as the practice, so that we can understand why things are drawn as they are.

Advanced topics include dimensioning, tolerances, nonthreaded mechanical elements, springs, thread systems, mechanisms (cams, gears, bearings), working drawings, jigs and fixtures, axonometric projections, and more. The text closes with a useful discussion of computer–aided drawing and design (CADD). Appendices detail drafting standards.

This is a fine instructional text useful to learners with some background, and to woodworkers who would like to spend their project planning time more efficiently.

Woodworking and Cabinetmaking: A Basic Guide to Working with Wood by F. Richard Boller, © 1986 (Macmillan Publishing Co., 866 Third Ave., New York, NY 10022) 353 pp., hardback, $18.95

This AUDEL manual is a 353–page hardback at a paperback price. Its information is solid and basic but not flashy—which may be precisely why AUDEL manuals are such a good buy. In clear, simple, and accurate terms, Boller covers materials, design, hand and power tools, basic construction, and setting up a home workshop. Only the chapter on projects disappointed me. Much of the electrical equipment in the photos appears antique, and the projects illustrated look as though they were made in the 1950's. I really wonder how much more expensive it would have been if the author and editor had included projects and photos capable of dazzling neophyte woodworkers into wanting to produce their best. In short, this is a good reference volume, but its low interest value means it won't be pulled from the shelf often.

Making Cabinets and Built–Ins: Techniques and Plans by Sam Allen, ©1986 (Sterling Publishing Co., 2 Park Ave., New York, NY 10016) 384 pp., paperback, $16.95

This book has a more modern feel to it than the AUDEL manual reviewed above. It's better illustrated with both photos and drawings, the writing is friendlier, and its project, a kitchen, is more attractive and interesting. Some time ago I bought new kitchen cabinets because I thought the project was bigger than I could handle. If I'd had this book then, the new kitchen would have cost a third of its price, would have been better looking, and would have taken only a couple of weeks to build.

The book is not just for beginners—its most interesting feature may be the ninety pages of bills of material for various styles and types of modular cabinets. Full use of this book could change your home, or at least provide you with an interesting and even profitable project.

Furniture Repair & Restoration: Over 100 Methods & Projects by Len and Kay Hilts, © 1981 (Creative Homeowner Press, P. O. Box 527, 24 Park Way, Upper Saddle River, NJ 07458–2311) 160 pp., paperback, $7.95

Although *this volume* has been around since 1981, I ran across it only recently, and the penalty for my lack of vigilance in cruising the book stores has been at least a couple of pieces of thrown–away furniture. This is the book that shows you how to salvage those pieces that you thought were beyond repair. Highlights include fixing cane seats and backs, replacing casters, fixing "alligatored" finish, cigarette burns, dents and gouges, doweled joints, broken corners, edges, tenons and veneer, warped joints and surfaces, and water rings, among others. The full-color illustrations really help in the finishing sections. At $7.95, this one's a steal!

Cabinetmaking: The Professional Approach by Alan Peters, © 1986 (Macmillan Publishing Co., 866 Third Ave., New York, NY 10022) 197 pp., hardback, $29.95

In the broadest sense, this is a how-to book, but not as in "how to build twenty projects." Peters tells us how the Arts and Crafts Movement got to where it is today, how to learn woodworking, how to set up a shop, and how to run the finances of a small business (in England! I say, mate, be certain to collect your value-added tax!) Fortunately, Peters moves away from these things quickly and gets to "Design-Thinking, Techniques and Inspiration," and how to get commissions, batch production, and advanced training. As a bonus of sorts, Peters throws in excellent drawings of several of his best designs. Since I got the book, I've gone through it four times, and it gets better each time.

Creating Small Wood Objects as Functional Furniture by Donna Z. Meilach, © 1987 (Crown Publishers, Inc., 225 Park Avenue South, New York, NY 10003) 288 pp., paperback, $14.95

Although I couldn't remember seeing the 1976 edition of this book, I had a strange sense of *deja vu* as I perused it—I had seen it all somewhere before, somewhere else. The newest item in its "up-to-date" bibliography was published in 1975. Apparently there have been no good woodworking books published since then. Well, there have been some, but this collection of "cut'n'paste" certainly isn't one of them. This book is lovely to look at in a dated sort of way, but be sure to look at it very carefully before you buy. PW

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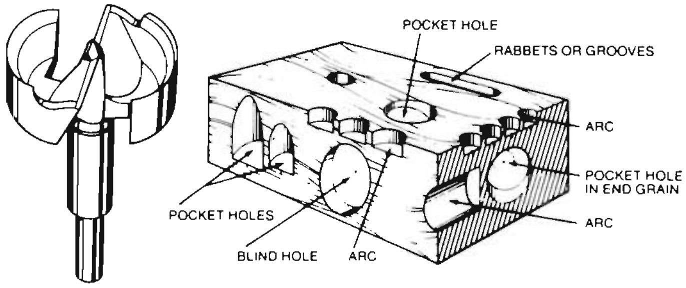

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Videoscene

by Alan Marks

Table Saw & Accessories: Operation & Safety
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From the series Woodworking Power Tools, ©1987 by Meridian Education Corp., 236 E. Front St., Bloomington, IL 61701, $89.00 each, each 14 minutes in length.

This series constitutes what could be defined as standard secondary school training fare—straight out of the high school audio/video department.

Considering the stress they place on avoiding accidents, these are the sort of videos all shop instructors and anxious beginners should know about. Blinking red text flashes on screen to caution students whenever the possibility of danger appears during a demonstration. Use of guards and guidelines for personal safety are pointed out. All tapes detail basic operating procedures. A teacher's guide containing an outline of the material plus a list of suggested discussion questions is included with each tape.

I have no criticism of the material itself. I do have a number of reservations concerning the way in which the presentation is made.

Every video in the series is narrated by an overdubbed voice, the owner of which never appears on screen. This anonymous voice gives instruction in professional, well–modulated, well–articulated tones reminiscent of what might be expected from a graduate of the Columbia School of Broadcasting.

The Meridian Education Corporation, who produced this tape, markets hundreds of videos and filmstrips covering every conceivable field, including robotics, electronics, design, drafting, automotive mechanics, welding, metallurgy, home improvement, and the building trades. It is interesting to note how the long–accepted, standardized approach to filmstrip education by the audio/visual industry now seems ineffectual compared to the way more modern video instruction handles it.

Years ago, when the expense of film and the cost of processing necessitated getting things right on the first or second take, visual portions of the instruction were done separately from the sound. Expensive miking and mixing on stage were avoided. Overdubbing was easily done in a sound studio. If the narrator fluffed his lines it cost nothing to re–record his voice on the magnetic strip.

Today, most modern video instruction is done with an instructor who is miked directly. It costs nothing to re–do a scene because with magnetic video tape all that is needed is to record directly over the unacceptable material. Modern miking techniques reduce expense as well. A concealed miniature lapel mike broadcasts an FM signal to the recorder, thus eliminating booms and cables.

Receiving instruction from an on–screen instructor instead of a disembodied voice makes a presentation more personal and more engaging. Had I continually been forced to review narrated videos for this column, the intense boredom would have caused my demise long ago.

I experienced other problems with the presentations as well. Modern teaching methods employ a few tricks which the producer of this series would do well to acquaint himself with.

A prime objective in visual instruction, or any instruction for that matter, is to raise questions in the student's mind. His mental faculties attuned to getting answers, the student grasps eagerly at the information supplied by his instructor and retains it. To accomplish this goal in a practical way, it might have been useful, for example, to begin by showing a unique operation or a unique object created using the power tool to be discussed. This would pique the student's interest and raise a few internalized questions, like: "How was this accomplished?" or "How can I take advantage of this in my own project?"

A second tenet of modern education holds that a student should have some idea of what material is to be presented before he is exposed to it. This may take the form of an introductory outline—easy to accomplish in the video format, using superimposition of text. Along with this a conscious effort can be made to keep the student appraised throughout the tape as to where the instruction is leading and what ground has already been covered, as a sort of review. Such orientation encourages wandering minds to stay in the groove.

The above commentary applies equally to all tapes in this series. I also have observations concerning a few of the tapes in particular.

Regarding the band saw tape, I was surprised they didn't use diagrams to illustrate how adjustments are made. Often there were fleeting references to parts and procedures never explained fully. There seemed to be more narration than actual demonstration. Of course, how much information can you really stuff into fourteen minutes of instruction? The machine used by the student did not appear to have a foot brake—to my mind an important safety feature. And why didn't they show how to change the blade? I guess this was the instructor's responsibility. The emphasis, as in all of the tapes, was on danger and safety. I know dust collection systems are usually standard in secondary school shops, but dust itself is a hazard and should be pointed out as such.

In the jointer/shaper tape, students are told that stock should be jointed "with the grain," but this term is not defined. If I were a beginning student, I think I would get confused when told that "edge jointing is used to make an edge straight with the face."

The lathe tape was very well organized and outlined and is an exception to the general criticism I feel applies to the other tapes. The parts of the lathe are adequately discussed, and both spindle and faceplate turning are demonstrated. Six types of turning tools are mentioned but the use of each is not demonstrated—the mysterious fourteen–minute time limit again.

Alan Marks is a cabinetmaker in Carmel Valley, California, and a contributing editor to PW.

Mention is made of the ball bearing dead center and the cup, or cone, dead center, but the differences between them are not explained. Why not tell students the reason for lubricating when using the dead center (to keep it from burning and digging into the wood)?

A demonstration of scraping is given, but the turning tool used is not named. The tool rest used in faceplate turning was different from the one used for spindle turning, but it was not named either. I would have liked a little more completeness in this video.

The information these tapes contain is of critical importance to any woodshop beginner. They should be required viewing by students before they are permitted to use machinery and, in my opinion, the instructor should also give a demonstration afterwards, as suggested in the teacher's guides.

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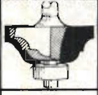
#490		1¼" **Classical**		1¼"	⅝"	¼"	$25.00
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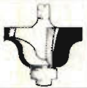
#231		5/32" **Roman Ogee**	5/32" R	1¼"	15/32"	¼"	$17.00
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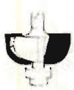
#340		⅛" **Cove**	⅛" R	⅝"	½"	¼"	$12.00
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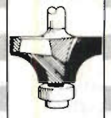
#350		⅛" **Round Over**	⅛" R	¾"	½"	¼"	$11.00
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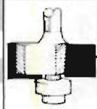
#370		⅜" **Rabbeting**	⅜" Deep	1¼"	½"	¼"	$14.00
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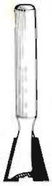
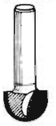
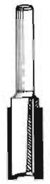
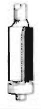
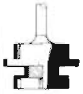
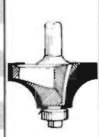
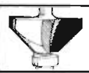
#403		⅜" **Dovetail**	9 degree	⅜"	⅜"	¼"	$ 7.50
#405		½" Dovetail	14 degree	½"	½"	¼"	$ 8.50
#409		¾" Dovetail	14 degree	¾"	⅞"	¼"	$10.50
#709		¾" Dovetail	14 degree	¾"	⅞"	½"	$10.50
#402		⅜" Dovetail	8 degree For	⅜"	½"	¼"	$12.00
#404		½" Dovetail	8 degree Leigh	½"	13/16"	¼"	$12.00
#708		1 1/16" Dovetail	8 degree Jigs	1 1/16"	1"	½"	$17.50

ITEM NO.	BEST CUT BEST PRICE	DESCRIPTION	ANGLE/DEPTH/RADIUS CIRCLE DIAMETER	LARGE DIA.	CUTTING LENGTH	SHANK SIZE	PRICE
#415		¼" **Core Box**	round nose	¼"	¼"	¼"	$10.00
#416		⅜" Core Box	round nose	⅜"	⅜"	¼"	$11.00
#417		½" Core Box	round nose	½"	11/32"	¼"	$14.00
#418		¾" Core Box	round nose	¾"	⅝"	¼"	$15.00
#719		1" Core Box	round nose	1"	¾"	½"	$18.00
#470		¼" **Straight**	plunge cutting	¼"	¾"	¼"	$ 7.00
#471		5/16" Straight	plunge cutting	5/16"	1"	¼"	$ 7.00
#472		⅜" Straight	plunge cutting	⅜"	1"	¼"	$ 7.00
#474		½" Straight	plunge cutting	½"	1"	¼"	$ 7.00
#775		½" Straight	plunge cutting	½"	2"	½"	$14.00
#476		9/16" Straight	plunge cutting	9/16"	1"	¼"	$ 7.00
#478		⅝" Straight	plunge cutting	⅝"	1"	¼"	$ 8.00
#479		¾" Straight	plunge cutting	¾"	1"	¼"	$10.00
#781		1" Straight	plunge cutting	1"	1½"	½"	$12.00
#500		⅜" **Flush**	**Trimming**	⅜"	½"	¼"	$ 7.00
#502		½" Flush	Trimming	½"	½"	¼"	$ 7.50
#503		½" Flush	Trimming	½"	1"	¼"	$ 8.50
#804		½" Flush	Trimming	½"	1 3/16"	½"	$ 9.00
#545		**Tongue & Groove**	Straight	1⅝"	1"	¼"	$30.00
#845		Tongue & Groove	Straight	1⅝"	1"	½"	$30.00
#546		Tongue & Groove	Wedge	1 3/16"	1"	¼"	$30.00
#846		Tongue & Groove	Wedge	1⅝"	1"	½"	$30.00
#450		⅛" **Beading**	⅛" R	¾"	½"	¼"	$11.00
#451		3/16" Beading	3/16" R	⅞"	½"	¼"	$11.00
#233		¼" Beading	¼" R	1"	½"	¼"	$13.00
#453		5/16" Beading	5/16" R	1⅛"	½"	¼"	$14.00
#454		⅜" Beading	⅜" R	1¼"	⅝"	¼"	$15.50
#455		½" Beading	½" R	1½"	¾"	¼"	$17.00
#375		**45 degree**	45 degree	⅝"	1½"	¼"	$15.00
#676		**Chamfer**	45 degree	⅞"	1⅞"	½"	$23.00

New 24-page catalogue now available, featuring hundreds of bits.

MAKE BEAUTIFUL RAISED PANEL DOORS . . . WITH YOUR 1/4" ROUTER!

SET ALSO AVAILABLE IN ½" SHANK - $79.95 - Item #852

Professional production quality bit makes it quick and easy to produce matching rails and stiles — the panel raising bit with ball bearing guide makes the raised panel perfect every time.

SAVE 55%

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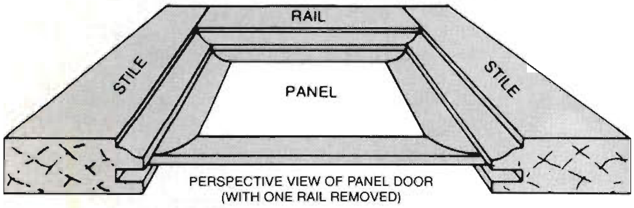
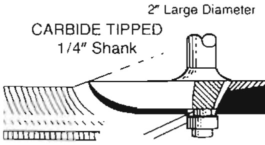
SALE PRICE **$69.95** FOR COMPLETE SET

ORDER ITEM # 554 for 1/4" Shank Set
(Includes all bits shown)

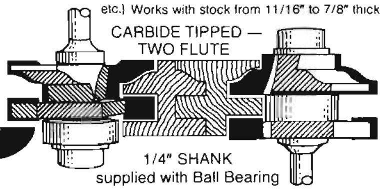


PERSPECTIVE VIEW OF PANEL DOOR
(WITH ONE RAIL REMOVED)

RAISED PANEL BIT
SUPPLIED WITH
BALL BEARING

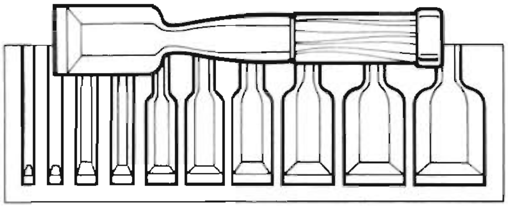


REVERSIBLE COMBINATION RAIL and STILE BIT
(For making matching rails and stiles in raised panel doors, etc.) Works with stock from 11/16" to 7/8" thick



To order by Master Charge or Visa Call Toll Free, 7 Day - 24 Hour Order Service
1-800-533-9298 or send check to: **MLCS Ltd., P.O. Box 4053 PF, Rydal, PA 19046**

We're Not Tool Snobs, But ...

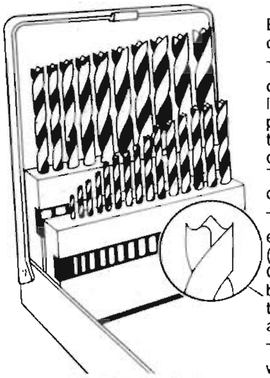


Laminated Steel Chisels are just not for everyone. As with much of life, owning and using the very best appeals to only a small select group of people, even when, as with chisels, the cost is clearly affordable.

For hundreds of years, traditional Japanese chisels have been forged by Masters and their journeymen. The blades, of high carbon steel, hardened to Rockwell C 64-66, are supported by an upper layer of iron that absorbs the shock of mallet blows. The very hard steel takes an exceedingly sharp edge and holds it far longer than any Western chisel. *These are lifetime tools.* Combination Tang and Socket construction for added strength. 9" Overall, 2-1/4" long Blades. Sizes: 1/8", 1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/4", 1-1/2".

ORDER #02-0731 set of 10 Laminated Steel Chisels only $89.95 plus $4.00 ship/handle.

WHY PROFESSIONALS USE BRAD POINT DRILLS



Brad Points are engineered especially for wood - soft wood or hard.

The center point (brad point) of the drill is pushed into the marked location for the hole. It locks into position and will not slide out. Then the motor is turned on. The hole is drilled exactly where it is wanted. This is the most important part of doweling, after proper measuring.

The two outside spurs cut clean entry holes. There is no tear out (splintering) - not even in Oak or Curly Maple - so that if the hole is to be later plugged to cover a screw, the periphery of the hole will be almost invisible.

These spurs provide smooth hole walls and almost flat bottoms. A dowel should touch bottom to glue properly. Metal working drills leave a tapered bottom.

It is best to own a complete 25-pc set and have every size from 1/8" to 1/2" in increments of 1/64ths (.0156") because commercial doweling is seldom sized exactly. Dowels that are too loose don't cut it; those that are too tight don't fit.

WHY DOLLAR'S BRAD POINTS ARE BEST: Our drills are milled from the solid; others are only roll forged. Our brad points and spurs are first milled then ground for accuracy. We use high carbon, alloy steel. Many others are made from plain carbon steel. Our drills are heat treated and hardened to Rockwell C48-52. They are tough, sharp and long lasting. Most companies that sell drills do not know what they are made of, or what the hardness is.

AS FOR PRICE, YOU BE THE JUDGE.

These drills will fit any 3/8" or larger chuck.
FREE metal index included.

ORDER #10-0100	25-pc Brad Point Drill Set	**only $29.95 ea.**
	2 or more sets to one address	**only $26.95 ea.**

Ship/Handling $3.00 for 1, $5.00 for 2 or more to one address.

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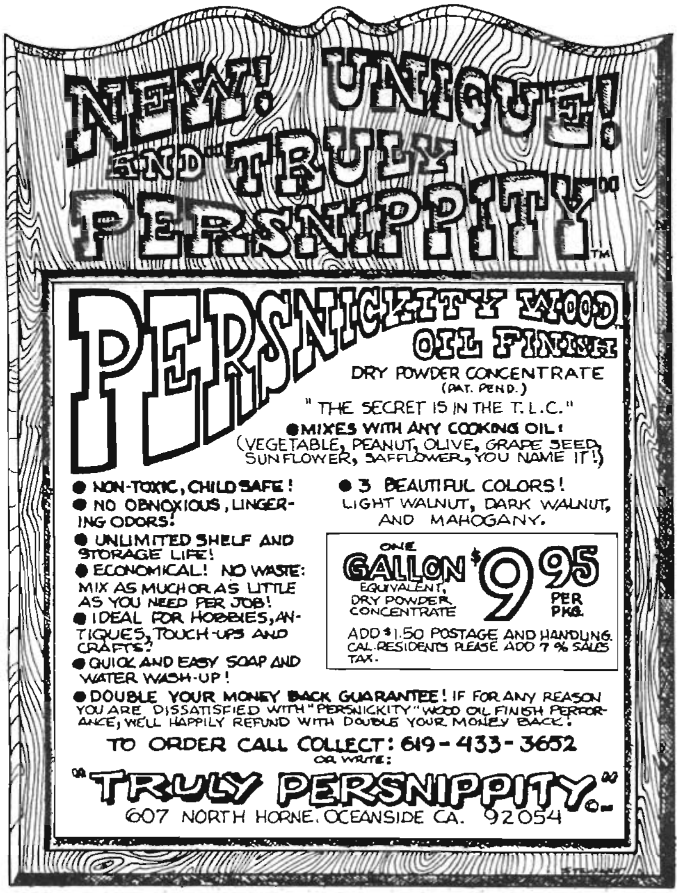

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ADD $1.50 POSTAGE AND HANDLING. CAL. RESIDENTS PLEASE ADD 7% SALES TAX.

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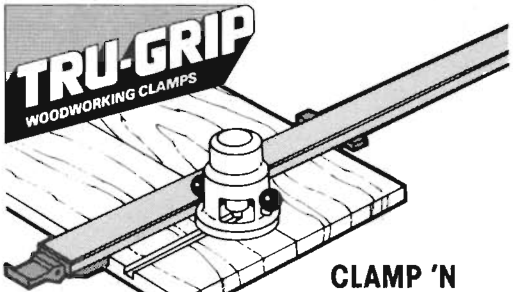

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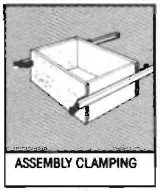

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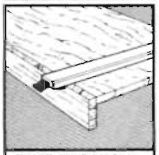

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- Bar Clamp
- Fence
- Straight Edge
- Power Tool Guide

As a FENCE or GUIDE, it attaches ten times faster than 'C' clamping and won't surface mar wood. **As a BAR CLAMP,** the unique low profile jaws enable you to clamp butt-jointed corners (down to ½" material) and also allow edge clamping. These clamps always lay flat for easy assembly set-ups. World's fastest, most versatile bar clamp!

TWO SIZES AVAILABLE:

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The Business End

by Peter Good

Effective Selling

Wouldn't it be nice if every meeting with a potential client actually resulted in a sale? I can't make promises, but perhaps I can give you some new insights into the process of effective selling that can substantially increase the returns on your efforts.

An important ground rule in commercial dealings is that you must get out of yourself and learn to relate to the customer on their level. You must learn to read between their lines, and when they speak, it's important that you really hear what they say. A big problem that many of us have is that we're rather self–centered and tend to take a glorified view of our products and abilities. While there's nothing inherently wrong with this, we sometimes become preoccupied with such notions, clouding our ability to establish a meaningful and productive sales relationship with a potential buyer. So, the first thing we have to do is to be able to mentally put ourselves on the shelf—secure in the knowledge that our self will still be there when we come back for it—and devote our full attention to the potential buyer.

A good way to get used to this type of attitude is to practice it on the phone. This is particularly important when someone calls you for the first time in regard to your business. When the phone rings, before you pick it up, be sure that your mind has finished dealing with whatever you were doing before the phone rang. Put that activity, thought, or whatever, mentally on hold. It's crucially important in the sales process for you to "be there" when you make initial contact with a potential customer. Don't be sharing any part of your attention with anything else. If you do, you're likely to miss some of the subtleties of the caller's message, and perhaps even make some glaring errors, like failing to catch their name the first time. If, at any other time in that conversation, you have to ask them to repeat their name, you weren't there when they said it the first time; you were somewhere else, mentally. And if you're only half there now, they may reason, will you continue to be only half there?

Remember that the caller is coming to you for help in some way. They may be timid and, in all likelihood, harbor many fears about contacting you. Will you understand what they need? Do you do that sort of thing? Do you have the time? Can they afford it? Will you treat them fairly? Do you do good work? Can you really provide what they want, or are you just another seller of empty promises?

In talking to you, the potential customer may not express their fears, but you need to understand that those things are present, even if they are not spoken. We all have fears when contemplating the purchase of nearly everything. We often fear that the product or service will be too expensive, will not do what we hope it will do, or any one of a hundred other things. (Remember your last major tool purchase?) We have these fears

---

As the owner of Grand Openings in Oakland, California, ***Peter Good*** *manufactures doors. He also gives seminars at national woodworking shows on business aspects of running a small shop.*

WOODWORKER II best on TABLE SAW

With this ONE ALL PURPOSE blade 40 Teeth and 1/8 kerf. SMOOTH RIP & CROSSCUT 1" - 2" ROCKHARDS and SOFTWOODS with **smooth-as-sanded** surface. PLY-VENEERS oak/birch crosscut with NO BOTTOM SPLINTER.

- Mostly 1/8 kerf 15° ATB and 20° face hook (easyfeed).
- DOUBLE HARDER and 40% STRONGER CARBIDE.
- Ends **blade changing** (does rip, combo and crosscut).
- Ends **scratchy saw cuts** (for the rest of your life).
- Ends **second step finishing** (jointing and sanding).
- Ends **cutting 1/16" oversize** to allow for RESURFACE.

Buy and **sharpen ONE** blade instead of 3, 24T rip, 50T Combination, 80T Crosscut.

- *Strongly* recommend our *.001 flat* **large stiffener - dampener** against outside of blade for smoothest, quietest, cuts by this and any other blade.
- Use 30T if ripping mostly 2" - 3" hardwoods.
- Side wobble held *.001* — others .004/.010 is common!
- RAISE for THICK woods, LOWER for THIN woods and *perfect cut everything!*

	List	Sale		List	Sale
12" × 40T × 1"	$183	$109	8" × 40T 3/32"	$136	$82
12" × 30T × 1"	162	97	30T 3/32"	115	69
10" × 40T	156	94	7 1/4" × 30T 3/32"	112	49
30T	135	81	7" × 30T 3/32"	112	49
9" × 40T	146	88			
30T	125	75			

5/8" holes, boring to 1 1/4" + $7.50 — SHIPPING $3.50

ALSO help your ***SEARS*** *blade,* ***FREUD, PIRANHA, JAPANESE THIN SAW, DML, LEITZ,*** *etc.*

FOR BETTER CUTS!
Use our large 1/8" DAMPENER STIFFENERS, against one side

6" - $25 Parallel and flat to *.001*
5" - 24 Stops vibration, flutter, cutting noise and blade ring.
4" - 21 Tryable and RETURNABLE. Full cash refund.

FREE dampener or $10.00 off with any 2nd blade.

5/8" holes bore to 1 1/4" $7.50 extra. Others available. Add $2.00 Shipping.

WOODWORKER I Best on RADIAL SAW

(tablesaw too) This ALL PURPOSE blade gives scratch free POLISHED cuts on all materials RIP or CROSSCUT up to 2".

- All 60T and 3/32" *THIN* kerf 20° ATB and 5° face hook.
- DOUBLE HARDER and 40% STRONGER carbide.
- THIN KERF:
  Saves 1/3 wood loss on each cut, radial or table.
  Feeds easy when used for moderate rip and crosscut on table saw.
  Reduces "JUMP IN" greatly for better "PULL-CONTROL".
  Practically **eliminates bottom splinter** on RADIAL CROSSCUT.
- Totally stops ALL bottom and top splinter on ply veneers in push-cut mode on RADIAL.
- Our STIFFENER STRONGLY RECOMMENDED AGAINST outside of blade only for best cuts.

Made and serviced in USA for your benefit.

	List	Sale
12" × 60T × 1" or 5/8"	$198	$119
10" × 60T × 5/8"	162	97
9" × 60T × 5/8"	156	94
8" × 60T × 5/8"	150	90
New 8 1/4" × 40T × 5/8"	136	82

RYOBI RA200 TS200 **MAKITA 5008 NBA**
HITACHI PSM8 **PORTER CABLE 368-1**

Lasercut DADO KING MULTITOOTH dado set cuts *ALL* 1/4" - 13/16" flat bottom grooves WITH or CROSSGRAIN all woods and VENEER PLYS. NO SPLINTERING due to unique 4T and 8T fillers and 24T outside saws. ***NOTHING LIKE IT IN THE USA!!***

8" × 24T × 4T × 8T fillers	13/16" set	$299	5/8" set	$209
8" × 24T × 4T	3/4" set	249	1/2" set	179
10" × 24T × 4T × 8T fillers	13/16" set	362		

FOR MCP MELAMINE & LOW PRESSURE LAMINATES

8" Neg-shear 24T × 2T or 4T fillers	$259
10" Neg-shear 24T × 2T or 4T fillers	314

5/8" holes — boring extra — SHIPPING $5.50

For TABLE and RADIAL SAW

(very good on chop saw too!) STOP SPLINTERING those SPLINTERY OAKS, HARDWOOD VENEERS and *thin* 2 SIDE LAMINATES ON PARTICLE BOARD. FOR FASTER FEED RATES AND MORE ABSOLUTE SPLINTER CONTROL.

DURALINE HI-AT
Note: *Fine Woodworking Editorial Nov./Dec. 1988 No. 73 pg. 65 S.N. recommends high alternating top bevel (ATB) thin kerfs and large blade stiffeners for smoothest cuts on RADIAL SAWS, etc.*

Jim Forrest, President and designer, microscoping cutting edge.

All 5/8" hole. Boring up to 1 1/4" $7.50 extra — Larger holes — time basis. Shipping $3.50.

HI-AT Price List

8" × 80T	$202	14" × 80T	$232
9" × 80T	207	100T	266
10" × 80T	207	16" × 80T	262
12" × 80T	212	100T	294
100T	253		

All CARBIDE is THE HARDEST OF THE C-4 grades and 40% STRONGER, NOT WEAKER!! For 50% to 300% longer life!

FREE dampener or $10.00 off with any 2nd blade.

CHOPMASTER SERIES FOR MITER SAWS for tight, smooth, splinter-free miter-joints. NEW AVAILABLE SIZES.

		List	Sale
Hitachi 8 1/2" DeWalt 8 1/2"	8 1/2" × 60T × 5/8"	$179	$ 89
Delta	9" × 80T × 5/8"	204	99
Ryobi-Makita	10" × 80T × 5/8"	207	109
Ryobi-Makita	14" × 100T × 1"	266	160
Hitachi	15" × 100T × 1"	277	164

Use small stiffener where possible.

WE RECOMMEND OUR FACTORY SHARPENING 2-3 DAYS ON THESE AND ALL MAKES OF CARBIDE TIP SAWS. SHIP IN UPS
(500 grit microscoped) 10 × 40T $14.25, 60T$16.83. Add return UPS $3 or 2nd Day Air $5
NOW . . . ORDER the one blade that will outlast you! (10-20 sharpenings possible)

SATISFACTION GUARANTEED OR FULL CASH REFUND.
40 years of fine American saw making & sharpening.

Dealer Inquiries Welcome.

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because we have been let down, ripped off or disillusioned so many times that we can scarcely believe it when everything works out just fine. You will have an incredible selling advantage if you can let a potential customer know early in the process that you understand that they have fears, and let them know that you will not repeat the things that brought on their fears in the first place. Then, of course, you have to be sure not to repeat those things, once you make the sale.

We have been concentrating on the concerns of the customer, which is as it should be. Most of us like attention and caring from others and if we get it, we will continue to go back to the source. Isn't it great when you find a garage that really knows how to fix your car right and does a good job, on time, with a smile, at a fair price? And isn't it great when the repair proves to be properly and reliably done? Most people would go considerably out of their way to patronize such a business and will never go elsewhere. Good businesses are so hard to find that when we do, we never let go of them. Think of your business the same way. Concentrate on the customers and their needs, and they'll keep coming back to you. Remember in your conversations with customers or potential customers to use words like "you" and "your" frequently, and use "me" and "I" only when necessary. This same thing holds true for any kind of advertising. Keep in mind that an important ingredient in successful selling is to create a bond between the buyer and your product or service. Ask yourself, "What can I say to this person to make them feel emotionally drawn to my product or service?"

What about reading between the lines? This is a little more tricky because most of us tend to not say exactly what we mean, because to do so might not be socially acceptable, and so we tone it down a bit—maybe a lot. Your job, therefore, becomes that of interpreter to determine the full importance of the buyer's words. The interpretive process is further complicated by the fact that what that person is saying is often deeply influenced by either positive or negative emotional experiences from their distant past, which they may not even be consciously aware of. Listen carefully for indications of resistance to certain materials, procedures or designs. Such resistance, although mildly stated, may be the result of some traumatic past experience. If this is the case (and you'll probably never know), it could be disastrous, from the standpoint of making a sale, for you to ignore their resistance or worse yet, insist that their resistance is groundless or without merit. Instead, it would generally be more productive to accept the resistance and offer alternative solutions. If you try to justify the original idea, even if you think it's better, it may cause the buyer to take a defensive position (perhaps not even knowing why), which will greatly reduce your chances of making a sale.

Speaking of alternatives, a good selling practice is to present several different solutions, if possible, and explain the advantages and disadvantages of each. This allows the customer to make an informed decision. More importantly, it indicates to them that you are sensitive to the fact that they may have needs or desires which may not have been fully expressed and that to accommodate such things, you are giving them some options. Also, if you explain the pros and cons of alternatives or choices, you are showing respect for their ability to select among several things.

Putting together a sales procedure which encompasses all of these issues will establish you as someone who cares about the customer and is responsive to their needs. If you also come through with a quality product or service that doesn't let the buyer down, you'll have a winning combination that, in the final analysis, may cause you a problem of a different sort: How to deal with success. All woodworkers should have that problem.

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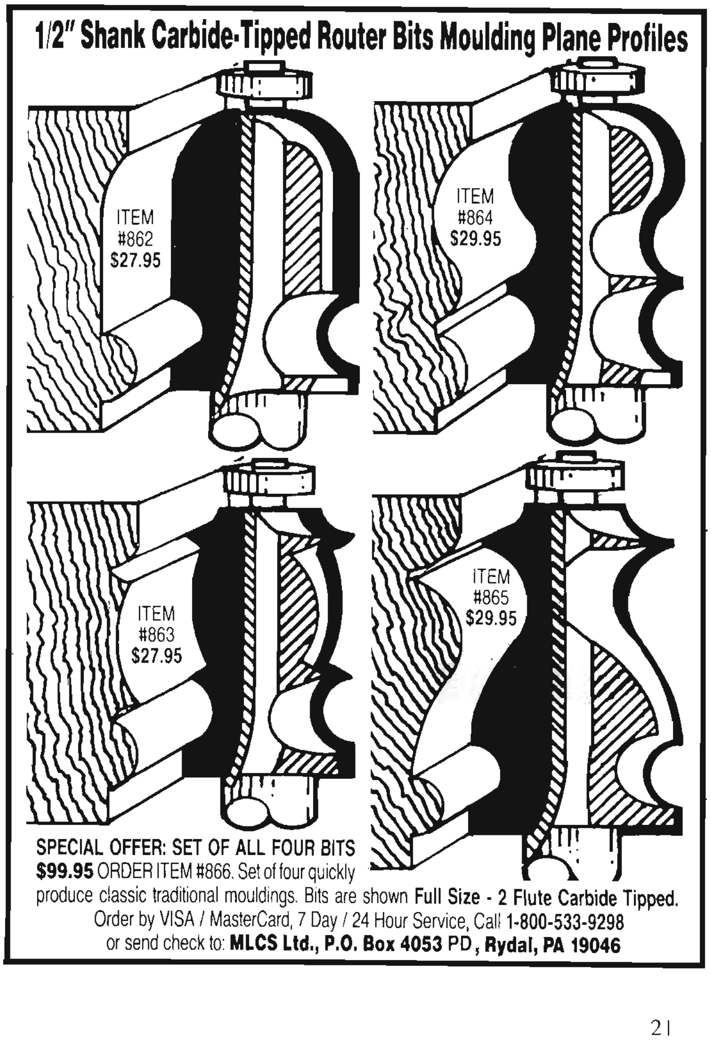
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Tests and Comments

by Hugh Foster

Tru-Match™ Edge Joining System

The toughest part of gluing boards edge–to–edge the old–fashioned way is lining up the faces flush to each other. A shaper with the right cutters can create a scarf joint that interlocks the two edges so the faces line up; this also results in a stronger joint with more gluing surface area. Well, now there's an easy way to get similar results with a router.

Porter–Cable's Tru–Match™ Edge Joining System works by way of a special, corrugated router bit and a stepped router sub–base. The bit and base are available individually, together as an accessory kit for certain Porter–Cable routers, or as a complete system that includes their model #6902 router fitted with a 1/2" collet.

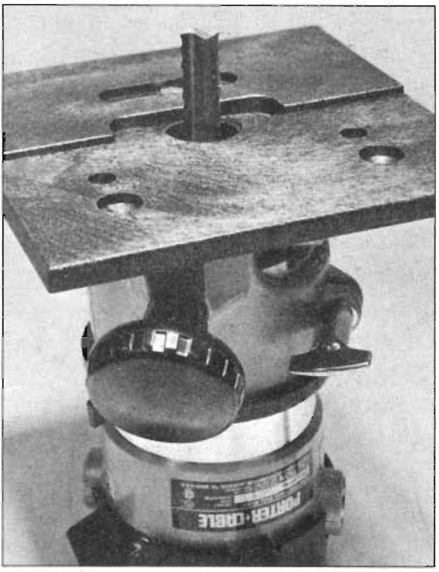
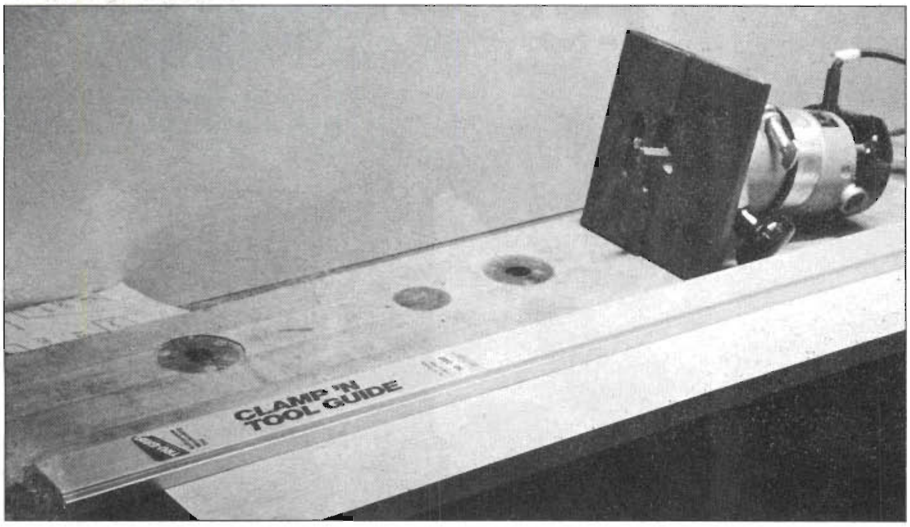
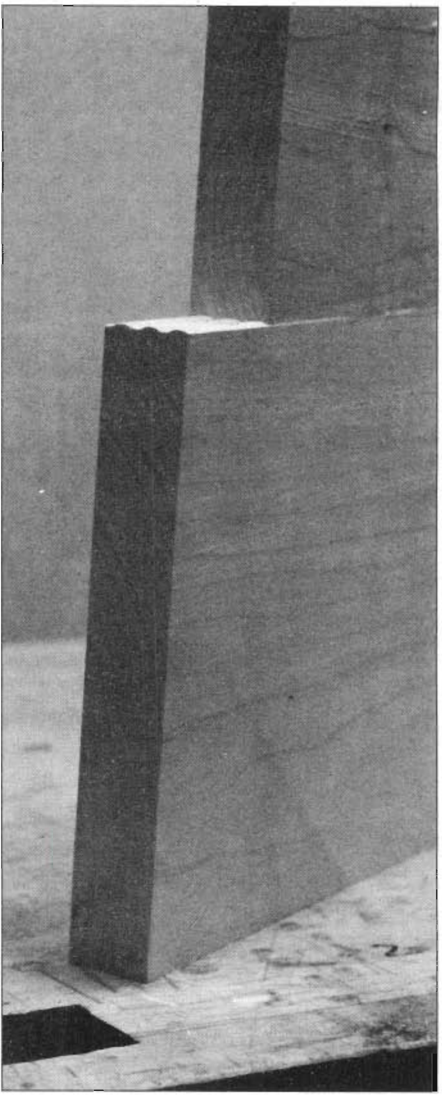


photo courtesy of Porter–Cable Corp.

The stepped sub–base allows you to make both cuts with the same depth setting.

The Tru–Grip Clamp 'n' Tool Guide is a straightedge for guiding routers or portable circular saws that can be secured without C–clamps or hand screws; it can also work as a bar clamp.




photos by the author

The corrugated profile on the edge of one board is offset just enough to match the profile on the other board so the two sufaces line up flush.

To use the tool, clamp a straightedge 3-1/4" back from the edge to be joined. What came to mind for this straightedge was the Tru–Grip Clamp 'n' Tool Guide; interestingly enough, these Tru–Grip clamps in 24" and 50" lengths are available at Porter–Cable Service Centers as well as from Trend–Lines, Rodman, and other tool sources. The clamps cannot be recommended too highly.

Set the depth of the bit to the thickness of your material, plus 1/8". Put your hear–muffs on: the tool runs at 92dB, not bad for a router, but loud enough that protracted use is sure to damage your hearing; better safe than sorry!

As with most router operations, always run the tool from left to right. If you have the layout right, the only thing you'll have to remember is to turn the router 180° for opposite sides of a joint. Routing half the joint on the "high" side of the router base and the other half on the "low" side is what permits the two halves to mate flush.

This tool is such an easy operator that it might make biscuit joining as irrelevant as biscuits have made doweling for this kind of application. It makes for fast, easy, and supremely accurate work. **PW**

Hugh Foster *is a part-time furniture designer/builder in Manitowoc, Wisconsin and the author of* The Biscuit Joiner Handbook *(Sterling Publishing Co., 387 Park Avenue South, New York, NY 10016).*

Where to Get Them

Porter–Cable's Tru–Match Edge Joining System #692 specially fitted router and bit, or #6921 sub–base and bit accessory kit for routers with #42186 or #10695 sub–base: contact Porter–Cable Corporation, P. O. Box 2468, Jackson, TN 38302-2468, (901) 668-8600.

Tru–Grip Clamp 'n' Tool Guide available from Porter–Cable; Rodman and Company, Inc., 965 W. Venice Blvd. Los Angeles, CA 90015, (800) 228-1806; or Trend–Lines 375 Beachham St. Chelsea, MA 02150, (800) 343-3248.

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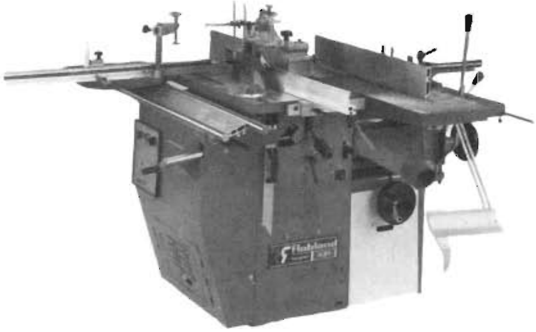

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Tried and True

by Graham Blackburn

The Workbench

I moved my shop recently and, as is usual when this happens, was forced into a consideration of all the extra stuff that seems to accumulate between moves. It's hard for me to work in a disorganized environment so my shop is generally pretty neat. I think I know what's what and where everything is—but it's astonishing how much extra creeps in and gets secreted away, quite forgotten until something as drastic as a move forces it out into the open.

Now it's easy to understand how that extra screwdriver that you picked up at a yard sale and threw into a drawer was quickly forgotten, and how you soon lost track of numerous other small items acquired here and there, but a workbench is another matter. Even small benches are substantial objects and difficult to overlook, but I had become oblivious to the fact that my shop now housed an extra full–sized antique cabinetmaker's bench, fully eight and a half feet long! It sounds impossible, especially when you consider that my old shop was not much bigger than a two–car garage, but somehow the bench had disappeared from view—at least as a bench—and I was quite taken by surprise when I began the move and uncovered this large behemoth lurking in the shadows.

Uncovered is, of course, the operative word here. This extra bench had been acquired a while ago as a potential project for restoration and incorporation into my regular workspace. The usual press of day–to–day business had delayed the proposed restoration, and in the meantime, the bench had begun to be used first as an extra worksurface, then as an extra storage surface. Eventually the workbench had disappeared under a welter of boxes containing painting supplies, carving samples, special hardware, scales, glue containers, cans of Danish oil, lacquer thinner, boxes of roofing nails, a big shop fan, and my emergency electric heater. I had erected a "temporary" shelf above the bench for jars of assorted nuts, bolts, washers, and screws, and had rapidly filled the space below with boxes of rags and other finishing supplies. One end of the bench had become completely obscured with the automotive equipment that I am forced to keep in the shop, and the other end had been pressed into service as a convenient place to rest a bunch of wooden sash cramps that had unexpectedly come my way. The result of all this was that the bench had literally disappeared from sight.

Now I have always loved tools for their own sake, but have never admitted to being a tool collector, so I try and abide by the self–imposed rule that if I haven't used something in the last two years it's time to get rid of it. I am very happy with my regular bench—a large European model of classic design which I periodically resurface and refinish—and the fact that I had completely forgotten about the very existence of the antique bench seemed adequate proof that it was not really needed and should be disposed of. This decided, I went about the awful business of packing everything else into boxes, and forgot about the bench for the moment. I felt sure that when the time came, I'd be able to find an eager home for such a desirable item.

The days passed, and the old shop grew gradually emptier since I was not moving far, and could effect the move bit by bit. Slowly, the antique bench was revealed until finally it was the only object left in the now vacant space. It stood there, magnificent, its ancient patina glowing in the deserted shop, looking larger than ever, and I could not avoid examining it more closely than I had before. As its presence grew more powerful, it became more difficult to do anything about disposing of it. This was no ordinary bench, no mere convenient extra worksurface for the occasional helper or student who finds his or her way into my shop; this was a king among benches, and I remembered my excitement when I had first come across it.

It had been one of those serendipitous finds that occur now and then when one is not actively looking for anything in particular. I had been helping a friend move, and the bench, which had been in the house when my friend had bought it, had had to go as part of the general clearing out for the new owner. It had not meant more to my friend than another cumbersome object to be dealt with, but I had seen it not only as something to do with woodworking (which always arouses my interest) but as something obviously very old and of great potential use in my own shop. At the time there had been no time to do more than quickly move it; and its subsequent fate, after a couple more moves on my part, has been explained above.

Now I looked at it more carefully. It was, as already mentioned, eight and a half feet long. Aside from the extra labor involved in the resurfacing of such a large bench that is necessary from time to time, a large bench is much to be preferred over a smaller one. It provides not only good working space and support for planing long and wide boards, but is also invaluable for assembly—especially of things with legs that must all be referenced off the same flat surface.

Cabinetmaker's benches have evolved over the last two hundred years into a fairly standard form equipped with a pair of vises—one at the right–hand end (as you stand in front of the bench), and one on the front of the bench, towards the left–hand end. The former is known as a tail or end vise, and the latter is a face vise or, if it extends all the way from the top of the bench to the floor, a leg vise. This bench was fitted with a massive tail vise, nicely dovetailed and operated by a large wooden screw, and a full–length leg vise, also operated by a large wooden screw, and complete with a bored adjustment bar at its foot.

Benches have not always had vises, and many of the holding devises that were used before they became common may still be incorporated to good effect on modern benches. This bench had its share of these, too, but before describing them in greater detail, I'd like to say something about the wooden screws used in earlier vises such as those on this bench. Most of the time when they are found today, they are in such a sad state of repair that it can be difficult to believe that they ever functioned very efficiently.

A recent Tried and True column (PW 48, April/May 1989 *described the tools*

Graham Blackburn *is a furniture designer/maker in Rio del Mar, California and the author of many books on woodworking and home maintenance.*

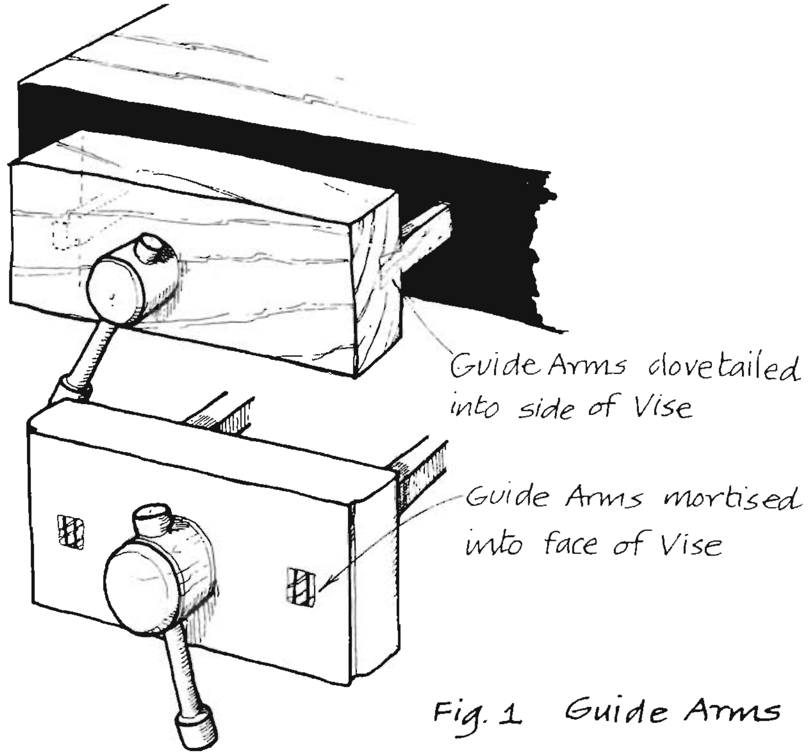

Guide Arms dovetailed into side of Vise
Guide Arms mortised into face of Vise

Fig. 1 Guide Arms

illustrations by the author

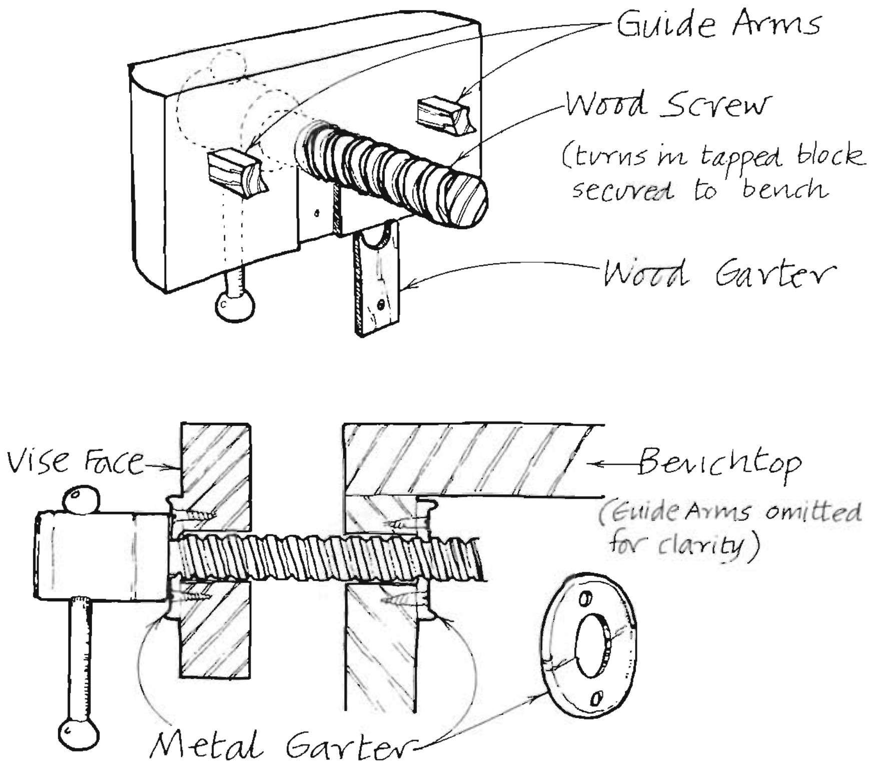
that were once common for making the wooden threads that were used on a variety of objects, including the large wooden screws common on cabinetmaker's benches. When adjusted properly and kept in good repair, these screws make possible vises that have great holding power combined with a niceness of grip—capable of firmly holding a thin piece of paper. Unfortunately, such old vises have often been terribly abused and it is sometimes difficult for them to securely grasp even a two-by-four. There are, however, really only two parts that need attention to keep these vises working efficiently: the guide arms and the screw garter.

Regardless of the condition of the benchtop and the mating surface of the vise (which can be improved, if necessary, later), the first thing to see to, if you come into possession of one of these vises (or a bench), is the proper operation of the guide arms. They must be rigidly fixed in the wooden face of the vise itself. This may have been effected in various ways, as shown in Figure 1. Furthermore, they must run smoothly and truly in whatever form of guide block has been provided for them. This is usually something very simple, fixed to the underside of the benchtop or to the supporting frame. Common faults are that the guide block is loose in its fixing, the slots or cutouts for the guides are excessively worn and permit too much play, or that the block and guides are misaligned—making a wider, and hence, too sloppy adjustment necessary if the vise is to be opened and closed to its full extent.

It may be necessary to replace the guide block if it is too worn or broken, or it may simply be a question of resecuring it firmly to the bench. Once the guides are rigidly fixed to the face of the vise, they should slide through the block with as little slop as possible. The fit should be so tight that waxing the guides is necessary before they will slide through easily.

The second part that may need attention is the garter. The garter keeps the screw attached to the face of the vise, and at the same time allows it to turn. It may be simply made out of wood, or it

Fig. 2 Wood and Metal Garters


Guide Arms
Wood Screw
(turns in tapped block secured to bench
Wood Garter
Vise Face
Benchtop
(Guide Arms omitted for clarity)
Metal Garter

may consist of a two–part cast iron piece, as shown in Figure 2. Once you locate it, it is usually quite obvious how it is (or ought to be) attached. All that is usually needed is to see that it too is securely in place and will allow the screw to turn with a minimum of play, possibly with the help of a little lubrication (grease in the case of a metal garter, and wax in the case of a wooden garter).

The above holds true for all vises—tail, face, and leg vises—but leg vises, because of their extra size, are usually provided with an additional adjustment at their foot. There are various ways in which the foot of the leg vise may be held securely, so that the face remains parallel to the face of the bench no matter how widely the vise is opened. The commonest method is a simple bar or beam, fixed to the face of the vise like the guides, which runs through a slot usually formed in the leg of the bench. This beam is bored with a series of holes so that a pin may be inserted at the appropriate point (see Figure 3).

Once the vise is running properly, its top surface must be made perfectly flush

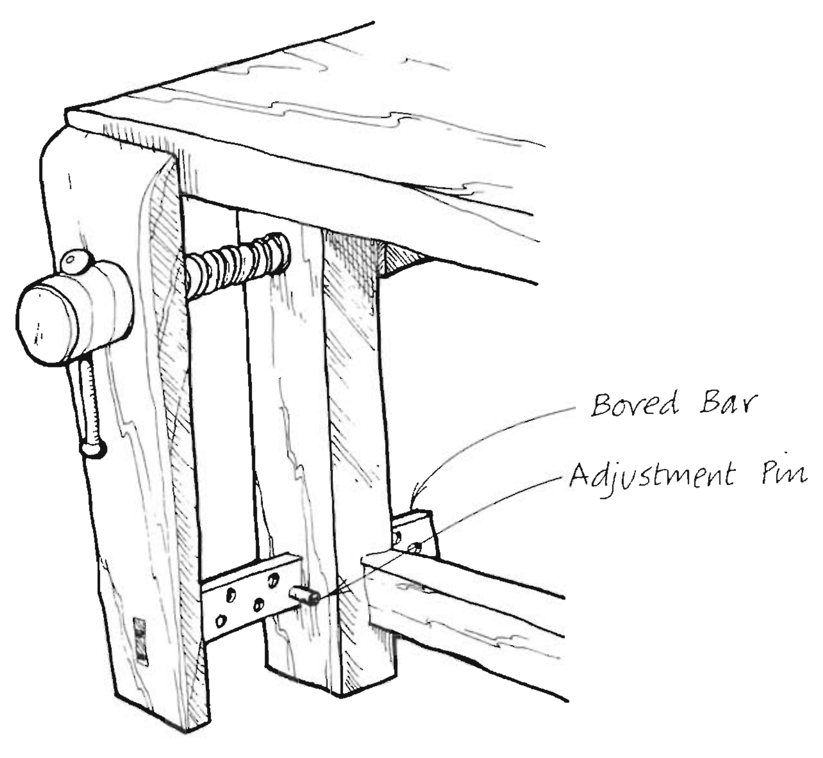


Fig. 3 Leg Vise Foot Adjustment

illustrations by the author

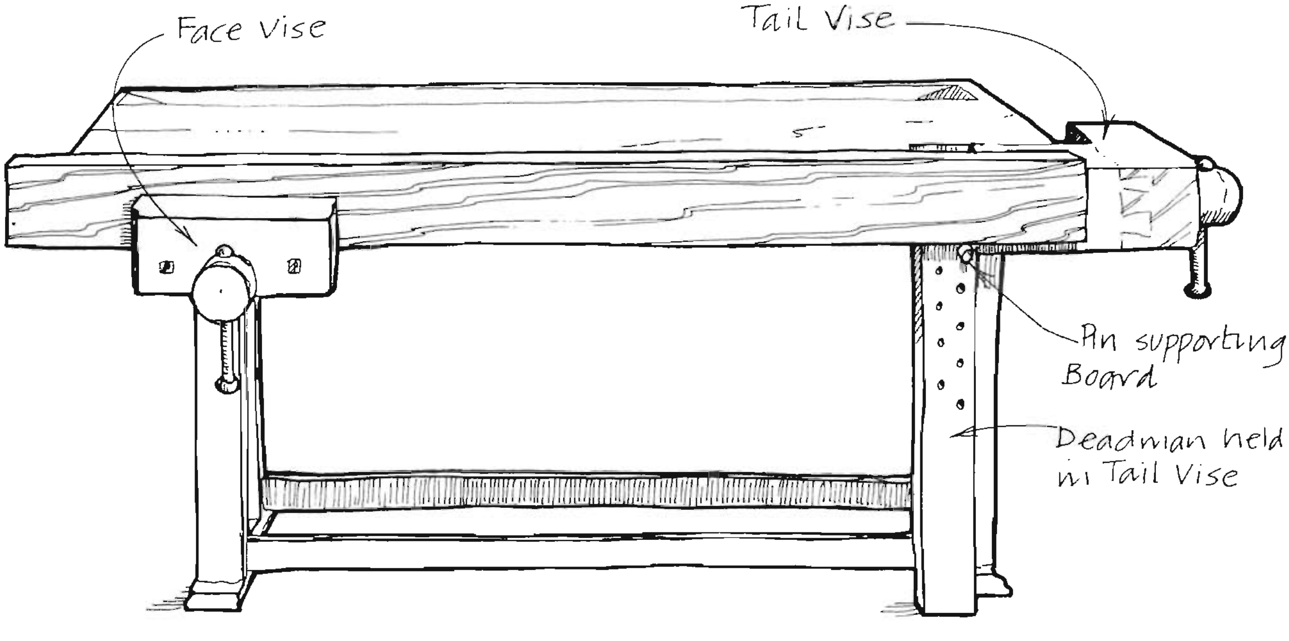


Fig. 4 Tail Vise Deadman

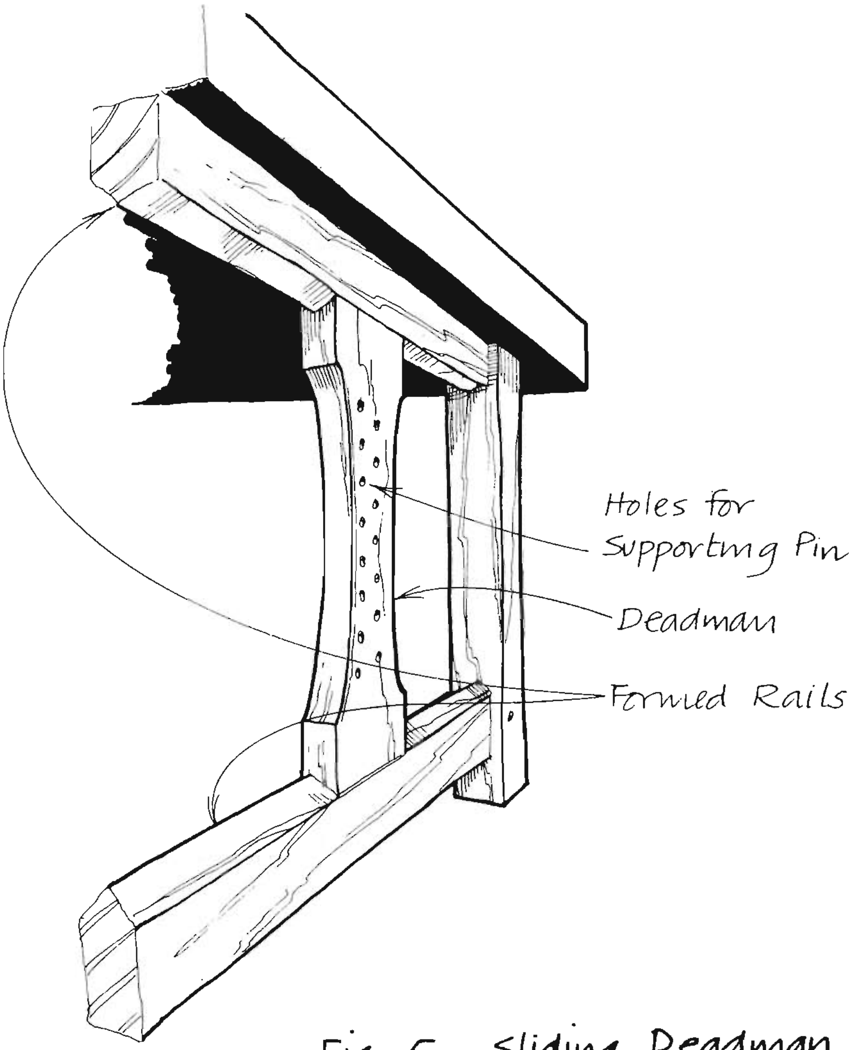


Fig. 5 Sliding Deadman

with the top of the bench. This is all part and parcel of properly dressing the benchtop. Flattening of the bench may be accomplished with the judicious use of a pair of winding sticks in conjunction with a power hand planer, a jointer plane, a smooth plane, or just a scraper—in that order, depending on the degree of flattening and refinishing necessary. I would like to correct the often erroneously held belief that refinishing a benchtop as old as the one under discussion is wantonly destroying valuable patina. If the bench had remained constantly in the hands of a diligent craftsperson from the day it was made, it would never have been allowed to deteriorate into a shameful "patina" in the first place. Such refinishing is not the same as sanding the surface clean and applying a coat of polyurethane—as is so often done by misguided and overzealous antique shops. Sandpaper should never touch a benchtop for fear of loose grains of abrasive damaging finely sharpened cutting edges, and polyurethane is a hideously inappropriate finish.

The inside surfaces of the vises, and the matching surfaces of the bench (or its legs or wherever the vise mates) should also be maintained in smooth and closely mating condition. A badly abused vise may need to have its inside face built up with additional wood to render it correctly planar. I find it also helps to glue thin pieces of card to these surfaces. The card is easily replaced when it deteriorates, and not only protects the jaws of the vise but also helps avoid denting or damaging soft pieces clamped in the vise. For real protection of a freshly finished workpiece it sometimes helps to glue pieces of baize, felt, or even carpet to the inside of the jaws.

The antique bench in my shop needed a little of all the above described attention, but basically its massive tail vise and handsome, full–length leg vise were as effective as the day they were made. Moreover, as mentioned earlier, there were additional holding bonuses, of which the most impressive was a sliding deadman.

A deadman is an upright that is often freestanding or held in the tail vise, provided with a peg that can be positioned in any one of numerous holes bored in its face to support the end of a long board held in the face vise, as shown in Figure 4. A more sophisticated version is a deadman made integral with the front of the bench, and not needing to be supported in the tail vise. Sometimes, such a deadman can be moved closer to, or further from, the face vise in order to support varying length boards at the most convenient place along their length. This bench had such a deadman, whose top and bottom ends were grooved to run on matching projections under the front of the benchtop and on top of the bottom rail, as shown in Figure 5.

The top was also provided with a series of mortises for the insertion of bench dogs to be used in conjunction with a cast iron bench stop set in the top of the tail vise—which had a mate set in the benchtop itself at the other end. Modern replacements, made of potentially less tool–damaging aluminum, might be preferable to cast iron ones, but these were possessed of such a handsome nineteenth century quality—they were obvious later replacements for wooden bench stops—that it was impossible to contemplate replacing them.

There were even several holes bored in the top for iron holdfasts—simple angled pieces of iron with a small flattened face at one end designed to hold anything securely to the top of the bench

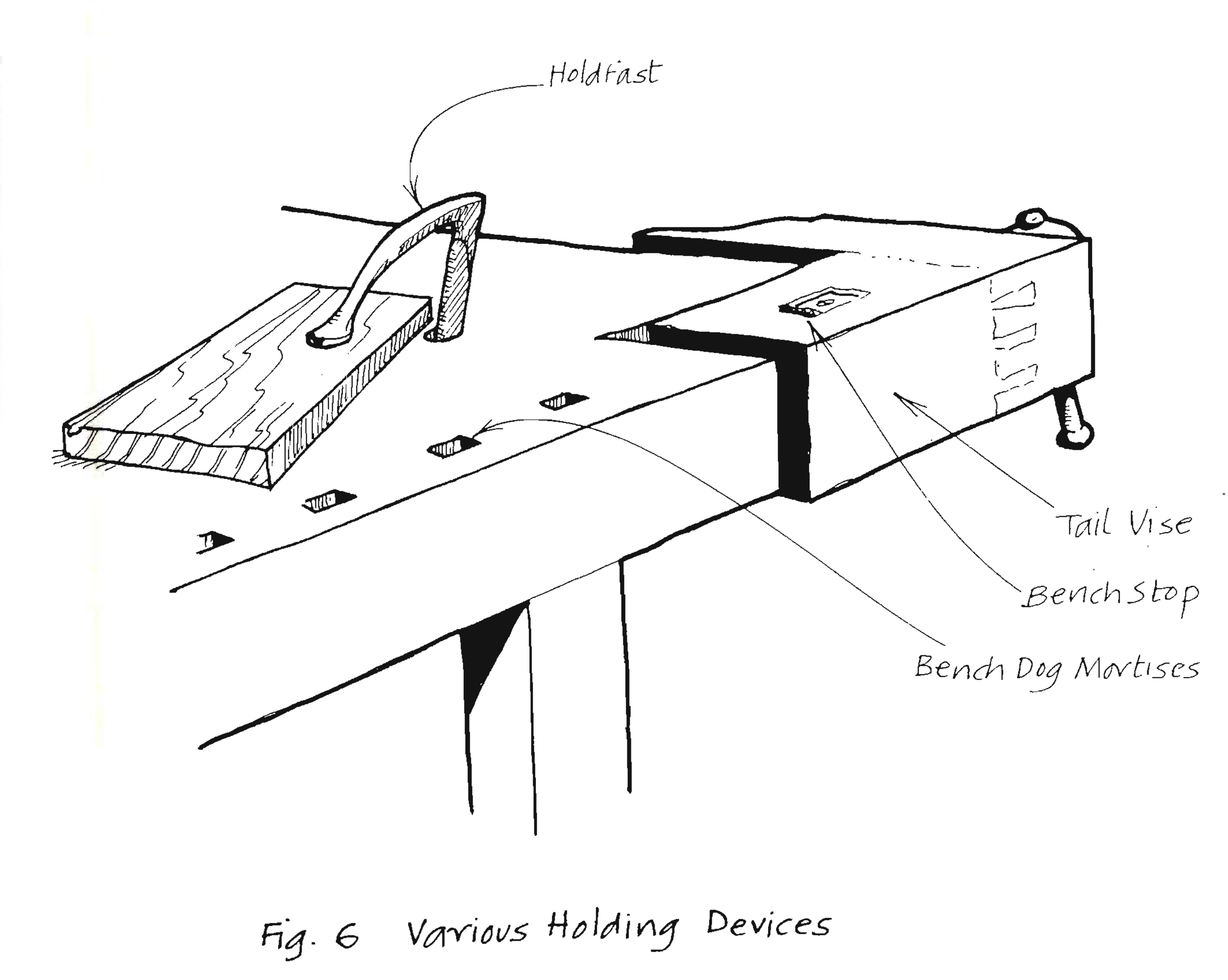


Fig. 6 Various Holding Devices

Illustrations by the author

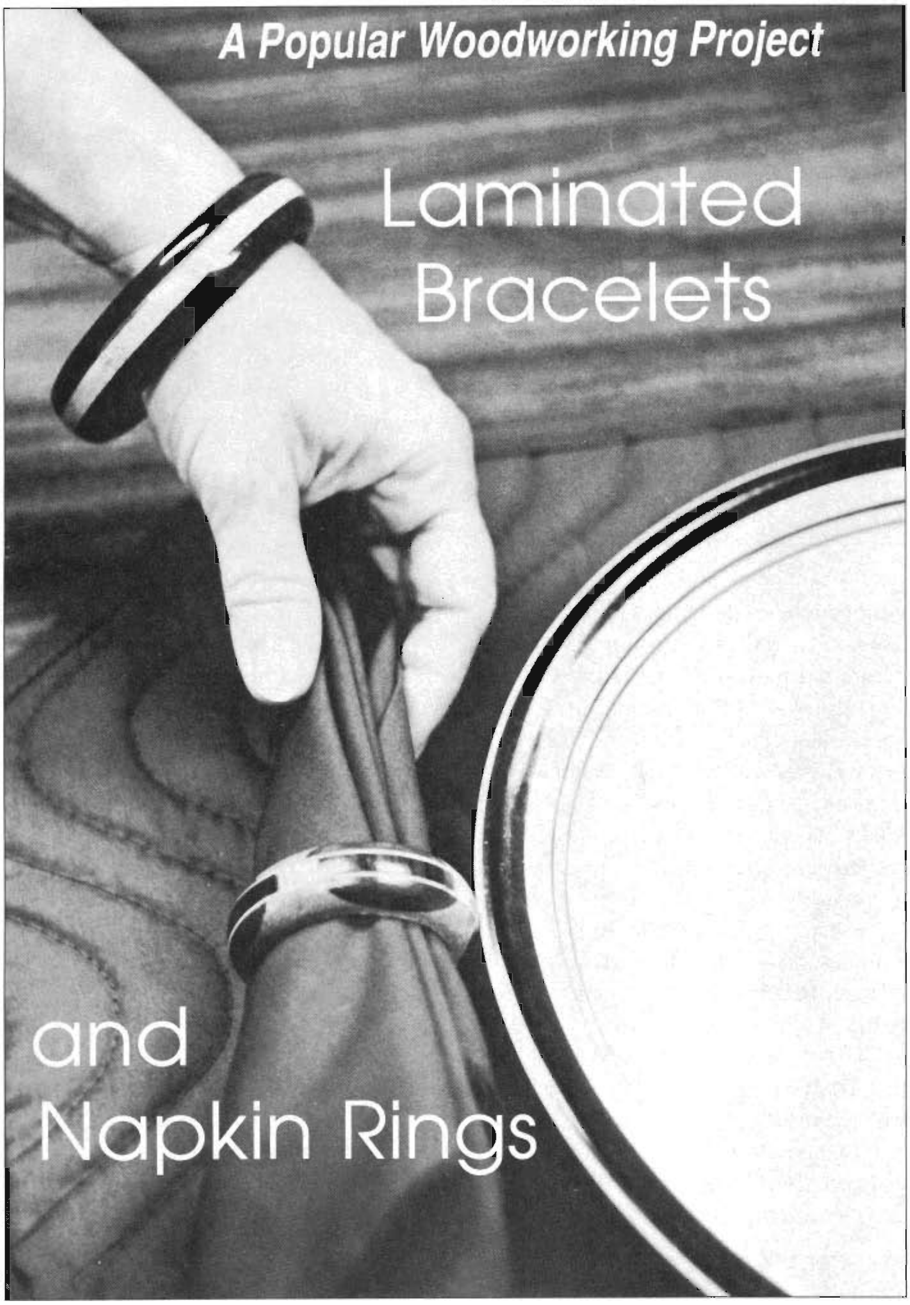
simply by being wedged into the hole (see Figure 6).

All these accommodations were made in a very professional manner. The vise screws and garters, while handmade, were not the least bit amateurish. The dovetailing of the various members of the tail vise, and the finishing details of the leg vise, together with the regular, neat way the dog mortises had been made, were every bit as good as those in a factory–made bench might have been. It was still obvious for a couple of reasons, however, that this was a handmade bench, and this lent an even greater charm to the piece.

Firstly, although the back piece of the top was thinner than the two massive pieces which comprised the main surface, there was no tool tray. And secondly, the undercarriage of the workbench appeared to have been built from parts that must originally have formed part of an early bed frame, since they were bored in the manner typical of the corded beds commonly used in eighteenth century New England. Such beds were held together by rope which formed an interwoven base upon which the mattress and bedding rested. The bedcord was woven through holes bored in the sides of the frame. These frame members were also commonly given a small bead to break the edges—just like the bottom members of my bench.

I had found the bench in Connecticut—where rope beds had once been very common—and it was tempting to speculate that some enterprising joiner back at the end of the eighteenth century, had traded a newer bed that he had been commissioned to make for the older rope bed it was replacing, and used the parts in the construction of his new workbench.

By this point in my assessment of the bench, I realized I was too attached to the quality, the workmanship, and the romance of it to be able to get rid of it. Somehow I would have to find room for it in my new shop, and I secretly promised myself that this time I would see it put back into service, and not allow it to once again become a mere glorified shelf or storage facility. I would have to bend my rule about usability a little, but then what else are rules for? PW



David M. Camp

A Popular Woodworking Project

Laminated Bracelets and Napkin Rings

by Devore O. Burch

I first became interested in lathe turning back in 1935, when I was taking woodworking courses at Polytechnic High School in Fort Worth, Texas. Each year, when the school held its "open house" to display the students' accomplishments, the wood shop seemed to draw the largest crowd. Not only did the students get to show off their work, but the shop instructor would have several live demonstrations going on. One of the real crowd–pleasers was turning wooden bracelets on several of the old line–shaft–driven lathes.

***Devore Burch** is a woodworker in Fort Worth, Texas.*

In retrospect, those bracelets were pretty crude. Making one involved pushing a wood blank with a pre–cut inside diameter onto a tapered mandrel, then turning the outside into various designs. (Some of you old–timers may recall this method.) Nonetheless, the girls would stand in line to get one (they were free, of course).

Several years ago, my wife overheard an old school friend and I recalling these shop experiences and insisted that I make some bracelets for her. Well, one thing led to another, and I eventually developed the techniques shown on these pages. I've made and sold thousands of these bracelets, and have given away an equal number as gifts. I've made them from all the domestic hardwoods, and practically every exotic species from amaranth to zebrawood.

Because a board foot will yield up to 20 bracelets, depending on the width you make them, you can indulge in exotic hardwoods without bankrupting the family budget. (I've found that the ladies will "ooh" and "ahh" over the wide bracelets but usually end up buying the narrower ones.) Also, one blank will yield both a bracelet and a smaller napkin ring, as you'll see later. You can make the bracelets in a wood shop with modest equipment—lathe, band saw, drill press, and table saw—but you will need to make several simple jigs and fixtures.

It's best to make these bracelets in batches to save setup time on the various machines and fixtures. Start with a small batch—say, 5 or 10, to help weed out the initial "uh–oh's" as you learn the process.

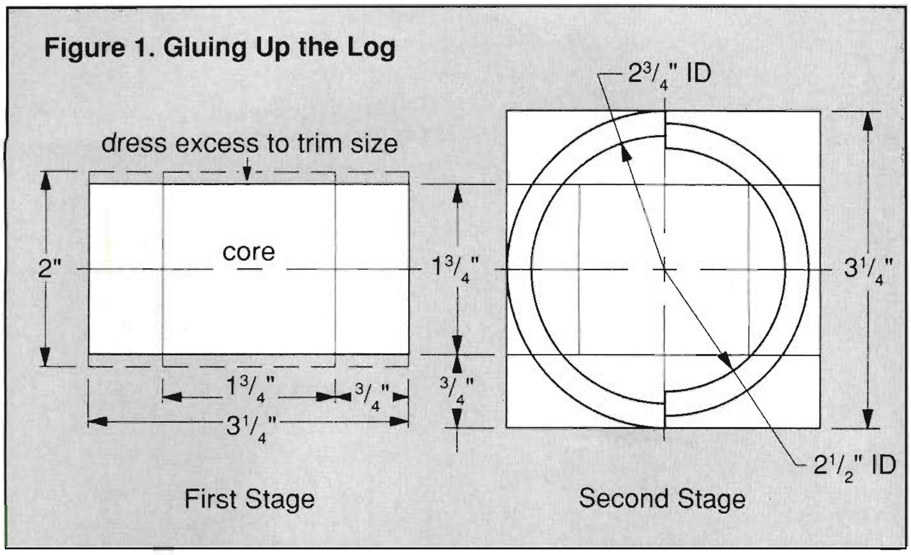
My mass–production techniques center around a very precise, three–hole referencing system that locates and holds the blanks for drilling, and attaches them to the mandrel for turning. In order to use 1/4" rods for reference pins, the holes that fit over the pins need to be ever so slightly larger. You can get a set of drill bits that are designed for just this kind of precision. The sizes of the drills are identified by letters of the alphabet, and the "F" drill's size is .257", or seven one–thousandths larger than 1/4". It is made specifically to drill holes that fit over 1/4" steel rods.

Making the Blanks

First, glue up a "log" (from which you'll slice off the blanks), using a core of hardwood that contrasts with the exterior wood you've chosen. The core will not be included in the bracelets, but will be a part of the napkin rings that you'll make from the same blanks. Amaranth over a maple core, or vermillion over a walnut core, for example, make especially pretty rings. If you don't want to make the napkin rings, use any inexpensive lumber, such as pine or fir, for the core.

I glue up the logs in two stages as shown in Figure 1. Start by cutting a 1-3/4" × 2" core (the length will depend on the number and thickness of blanks you want). Next, cut two 3/4" × 2" strips of exotic wood to the same length. Wipe the surfaces to be glued with denatured alcohol or acetone to remove the oils, then

Figure 1. Gluing Up the Log



Illustrations by Tom Larson

glue and clamp the strips to each 2" side of the core, using a good grade of clear epoxy adhesive. (Ordinary wood glues don't always give you a reliable bond on exotic woods.) I use G–2 brand epoxy, available from Headland International, Inc. (see Source List on page 33). This product is specially formulated for use on "oily" exotic woods, such as teak, rosewood, coco–bolo, and ebony. When the epoxy has cured, dress the 2" dimension to 1-3/4" and apply 3/4" X 3-1/4" boards to the other two core sides.

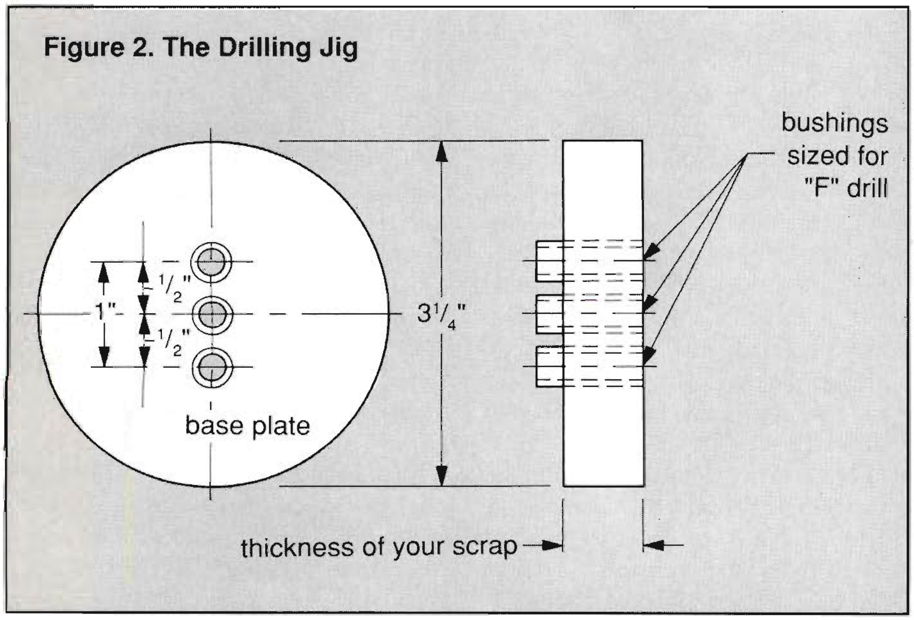
When the epoxy has cured, square up the ends of the log, find dead center at each end, and bore an "F" hole about 3" deep.

You can make your bracelets from one type of wood, but you'll get a more striking appearance if you laminate them from two or more contrasting woods, such as rosewood and vermillion with thin maple feature stripes (made from scraps of veneer) sandwiched between the exotic woods. Just glue up a log for each species you want to use, slice thin wafers from each, and laminate these to make your blanks. The combinations of woods and designs you can achieve are virtually unlimited.

I use a carbide–tipped Freud 80–tooth combination blade to slice off the wafers; it leaves a surface smooth enough for gluing without further surfacing. After you've cut off all the blanks with holes in them from one end of the log, go back and drill again so that all your wafers end up with that center hole.

I usually glue up about 10 wafer assemblies at a time, using the simple stacking fixture shown in the photo at bottm right, page 31. To make the fixture, cut a wooden base 1-1/2" X 6" X 10", drill an "F" hole in the center, and insert a 1/4" steel rod that is about 10" to 12" long into the hole (do not fasten the rod permanently to the base). Cut a top block the same size, with its own hole drilled through the center, to put over the top of the stacked blanks. Coat the mating surfaces of the wafers with epoxy, and stack the assemblies over the rod, placing pieces of wax paper between each bracelet "sandwich." Apply the top block and clamp, then withdraw the rod so it won't become a permanent part of the stack. After the epoxy has cured, clean out the center holes with the drill.

Figure 2. The Drilling Jig



Preparing the Blank for Turning

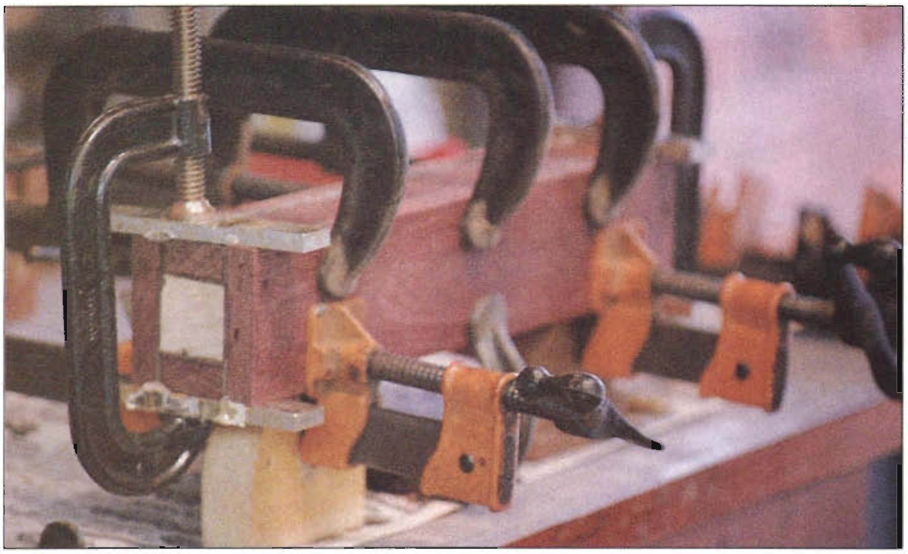
Next, make the drill jig shown in Figure 2; it is used to bore the hole pattern required for mounting the blanks on the lathe fixtures. I made the base plate for my jig from steel; you can make yours from tempered hardboard, or hardwood. Steel bushings for guiding the "F" drill can be ordered from Manhattan Supply Co. (see Source List on page 33). Drill the holes for these bushings on 1/2" centers, and use your bench vise to press them into the jig base plate.

To use the jig, place it over the blank as shown in the top photo on page 32, then insert a 1/4" pin through the center hole. Bore one of the outside holes, insert the second pin, and then bore the third hole.

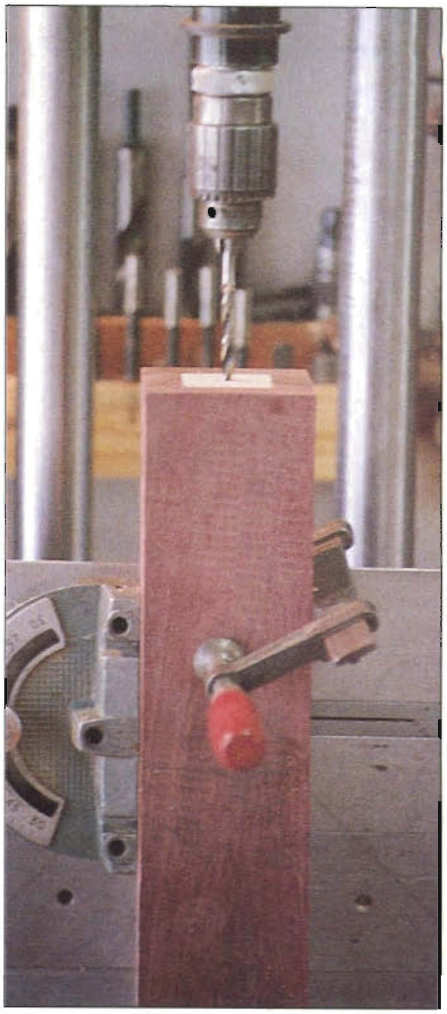
The blanks enable you to make one of two bracelet sizes: 2-1/2" inside diameter (small) or 2-3/4" inside diameter (regular). These two sizes will fit the hands of most girls and women (if you intend to sell the bracelets, it's a good idea to make some in each size). I cut these out with a thin–wall hole saw. Keep the saw sharp, and clean off accumulated oily sawdust (especially inside the saw) as you're cutting.

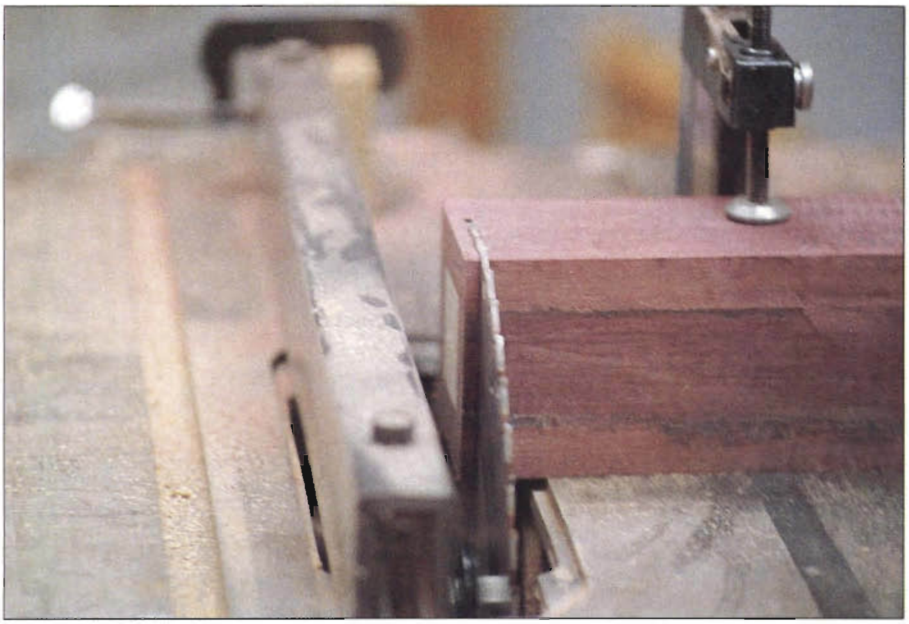
Make a holding jig for the blanks by drilling the hole pattern from your drill jig into a piece of two–by lumber long enough to clamp to your drill press table. Position this jig in line with the pilot bit of the hole saw, then press a 1/4" steel pin into each of the two outer holes. The pins should extend about 1/2" above the surface of the two–by.

Place a blank in the holding jig and bore about 1/3 of the way through the blank; flip it over and repeat on the other

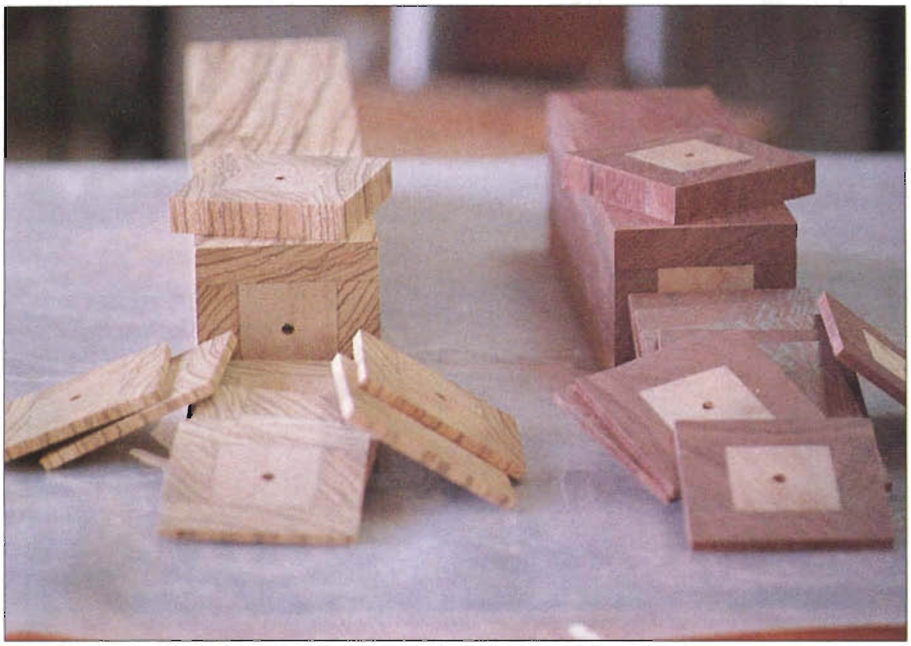


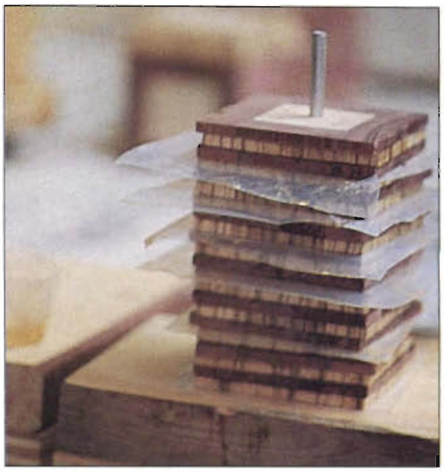
photos by the author



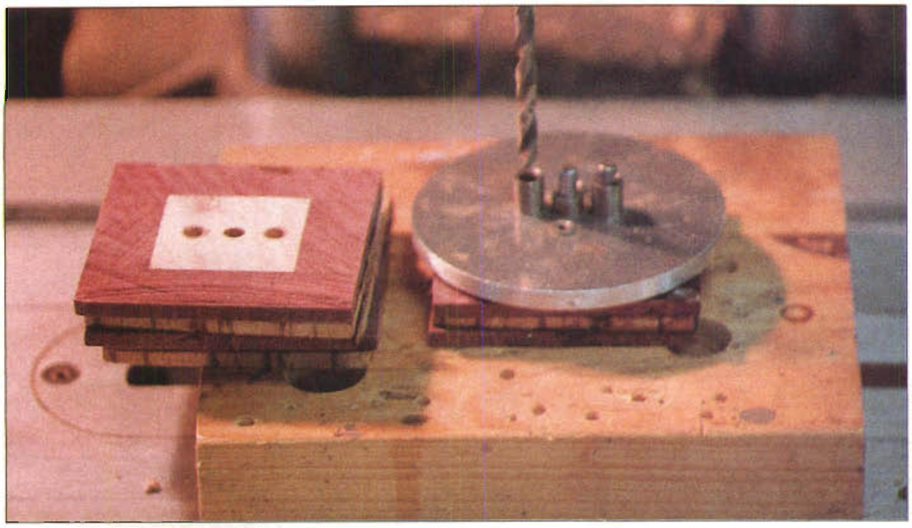


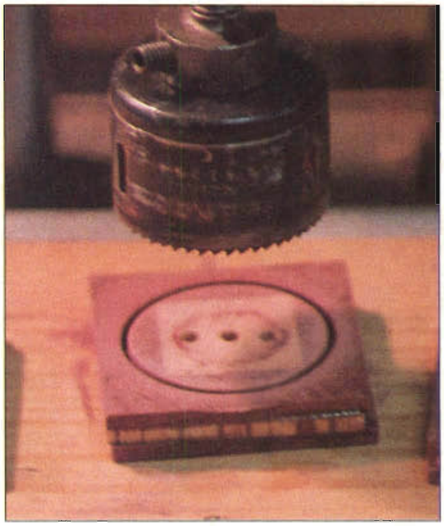
Glue the hardwood around a core of some other species (above left). Drill a hole in the exact center of the log (above). Set a stop–block for the thickness of the wafers, and remove the throat plate to allow them to fall clear of the blade (center).





Cut wafers of different thicknesses for bracelets of different widths (left). Put wax paper between layers to keep the individual assemblies from sticking together (above).





photos by the author

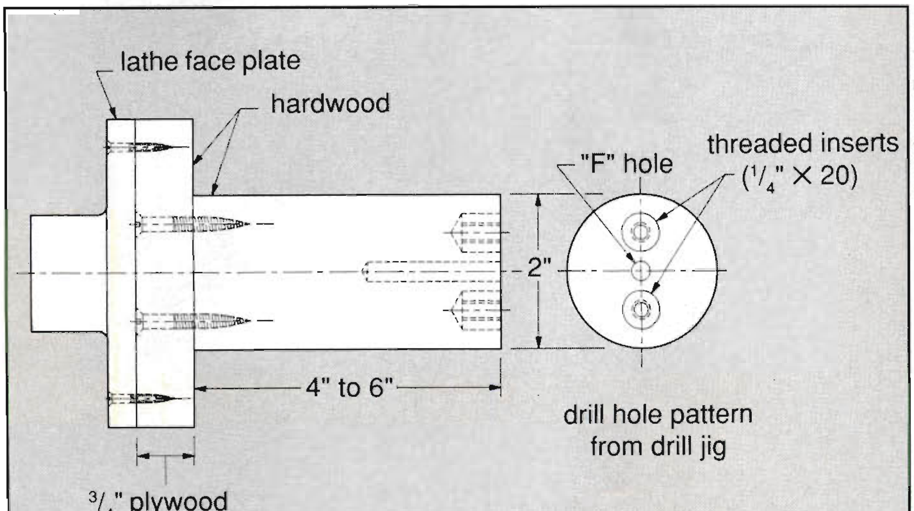
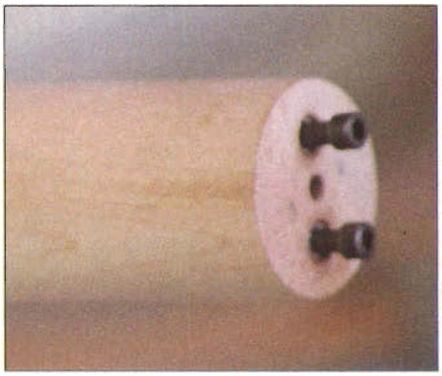


Figure 3. The Turning Fixture

illustrations by Tom Larson



(Above left) Use the center pin to locate the jig; drill one hole, then pin it and drill the other. Two pins hold the blank in place while you saw partway through with a hole saw (above right). Install threaded inserts in the mandrel, and use Allen screws to hold the blank in place during turning (above and below).

side (don't bore completely through the blank at this time). Now, remove the blank and saw the rough outside diameter of the bracelet (about 1/2" larger than the inside diameter) on your band saw or jig saw. I use a simple template disk with an "F" hole in the center to mark the OD for cutting.

Turning the Bracelet

Next, build the turning fixture shown in Figure 3. I use 1/4" Allen cap screws to attach the blanks; the screws fit into threaded inserts in the fixture. Mount the fixture on the lathe faceplate, then pin the blank through the center hole in the fixture (you can use one of the 1/4" pins from your drill jig, or the shank of a 1/4" twist drill). Install the screws, and remove the center pin. You're now ready to turn the blank into a bracelet—let your imagination run wild. For the profile, I've used templates, moulding cutter shapes, etc., but I like a simple design because it

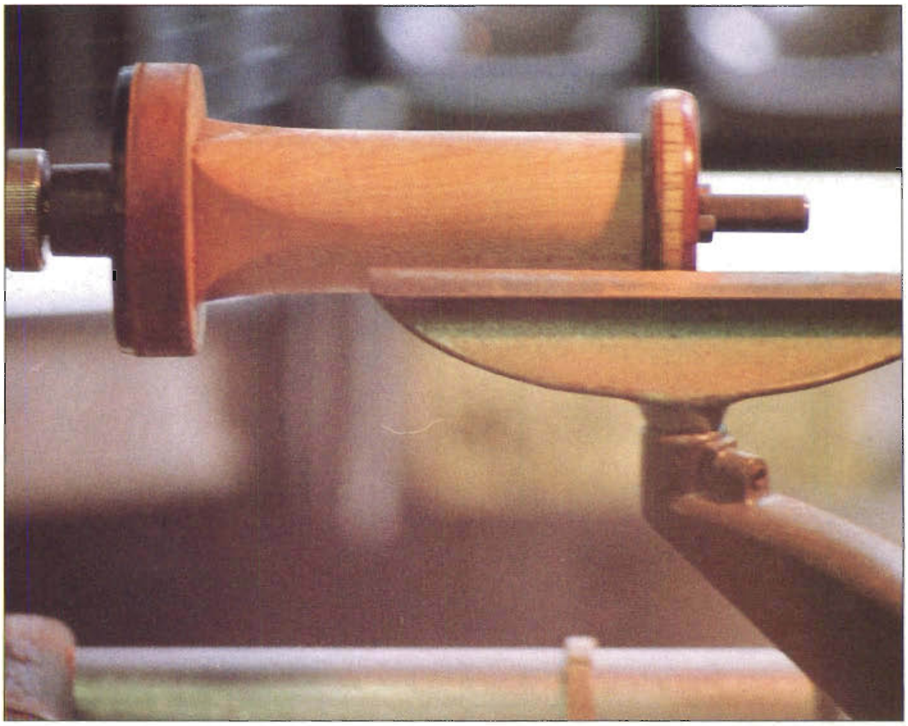
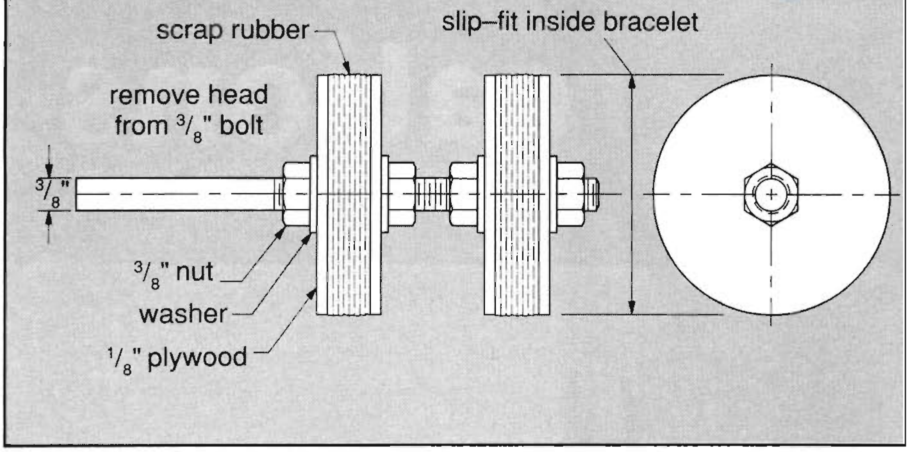
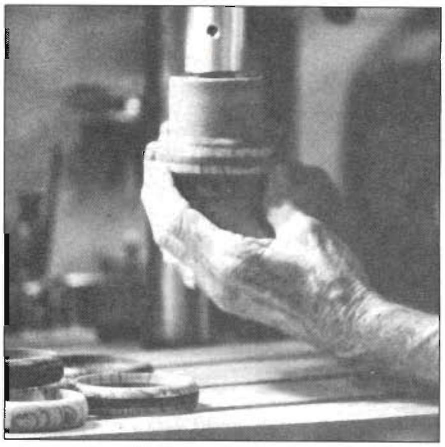


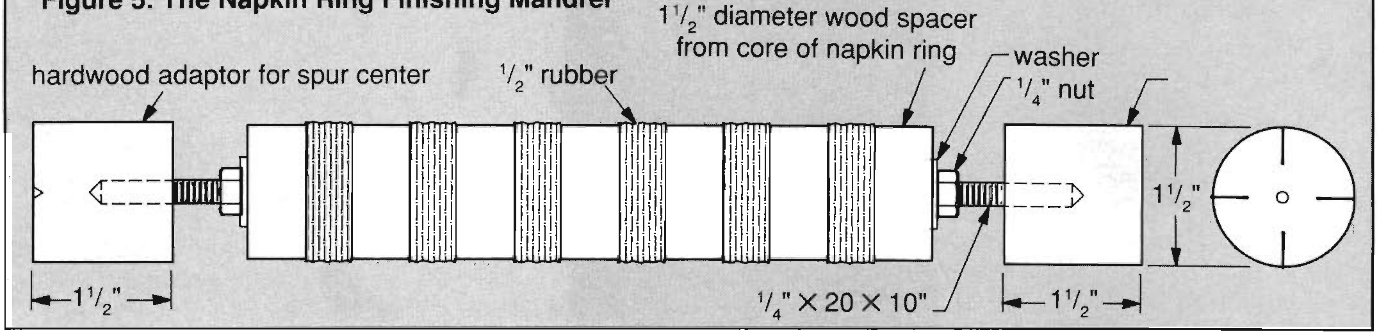
Figure 4. The Finishing Mandrel





Sand the insides of the bracelets with a smaller diameter sanding drum chucked in the drill press.

Figure 5. The Napkin Ring Finishing Mandrel


1 1/2" diameter wood spacer from core of napkin ring
hardwood adaptor for spur center
1/2" rubber
washer
1/4" nut
1 1/2"
1/4" X 20 X 10"
1 1/2"
1 1/2"

doesn't detract from the natural beauty of the wood.

After turning the bracelet with a sharp skew chisel, I sand it on the lathe, using progressively finer grits from 120–grit to 600–grit paper followed by crocus cloth; then polish with a soft cloth—the exotic woods polish like a gemstone. Now, put the bracelet back on the same setup you used with the hole saw and gently feed the saw through the bracelet to cut out the plug. (The bracelet will start spinning on the saw when you've cut through it.) Be sure to save the plugs, because you'll be making your napkin rings from them.

The final machining process on the bracelet is to sand the inside diameter with a drum sanding attachment on your drill press. This may seem awkward at first, but you'll soon get the hang of it. Hold the bracelet with thumbs and fingers of both hands and let it slowly rotate as you apply light pressure on the sanding drum.

Finishing

First, apply two coats of sanding sealer to the inside of the bracelet only; when dry, rub lightly with #0000 steel wool. Use your favorite finish on the outside of the bracelet. The finishing mandrel shown in Figure 4 makes it easy to apply a traditional French polish, using your lathe or drill press. Except for the 1/2" closed–cell neoprene rubber pads that hold the bracelets, all the parts are readily available at most hardware stores. I bought the rubber for my pads from Texas Rubber Supply, Inc. (see Source List).

Here's how I finish my bracelets: first apply two coats of sanding sealer, sanding between coats with #4000 aluminum oxide paper. Then apply six to eight coats of brushing lacquer, such as Deft Clear Wood Finish, following the label directions. After the final coat cures (in a day or so), I mount the bracelets on the finishing mandrel, chuck the mandrel in the lathe, and polish the lacquer finish with fine pumice and rubbing oil, then rottenstone. Finally, I wax and buff the bracelet to a deep, lustrous finish.

Napkin Rings

The procedure for making the napkin rings is similar to making the bracelets. You'll make them from the plugs removed from the bracelet blanks. The rings have an inside diameter of 1-1/2" and an outside diameter of about 2". Bore the ID about 1/3 through on each side, as you did the bracelets. To turn the rings, I waste one of the plugs to make an adapter for the turning fixture in Figure 3. Mount it to the fixture and turn it down so its smaller than the OD of the rings, then attach a napkin ring blank using longer Allen screws.

After you've turned the rings and bored out the center plugs on your drill press, save these plugs for use as spacers on the napkin ring finishing mandrel shown in Figure 5. Chucked between the centers of your lathe, the mandrel enables you to polish or finish six rings at once. **PW**

Source List

G-2 Epoxy:
Headland International, Inc.
2020 - 124th Avenue, N.E., Suite C102
Bellevue, WA 98005

Drill jig bushings:
Manhattan Supply Co.
151-A Sunnyside Blvd.
Plainview, NY 11803

Neoprene rubber for finishing mandrel pads:
Texas Rubber Supply, Inc.
217 Beach St.
Fort Worth, TX 76111

Unseen Creations

by Kathy Hackleman

As Dale Reif looks back over his life, there are few things that the Newton, Kansas, man would do differently, but he does wish he had spent more time studying woodworking magazines while he could still see. Reif, who has been blind for over ten years, took up serious woodworking about three years ago. He now spends several hours a day, six days a week in his backyard workshop.

"I don't think there is one word that describes properly what I do," Reif laughs. "It's the shaping and cutting of hardwoods. It's the undesigned art of machining and cutting of wood," he says, searching for the right combination of words to describe his craft.

Basically what Reif does is glue different types of wood together, cut a shape from the glued block and then sand it into the shape he "sees" in his mind. The end product is one that any sighted craftsman would be delighted to claim.

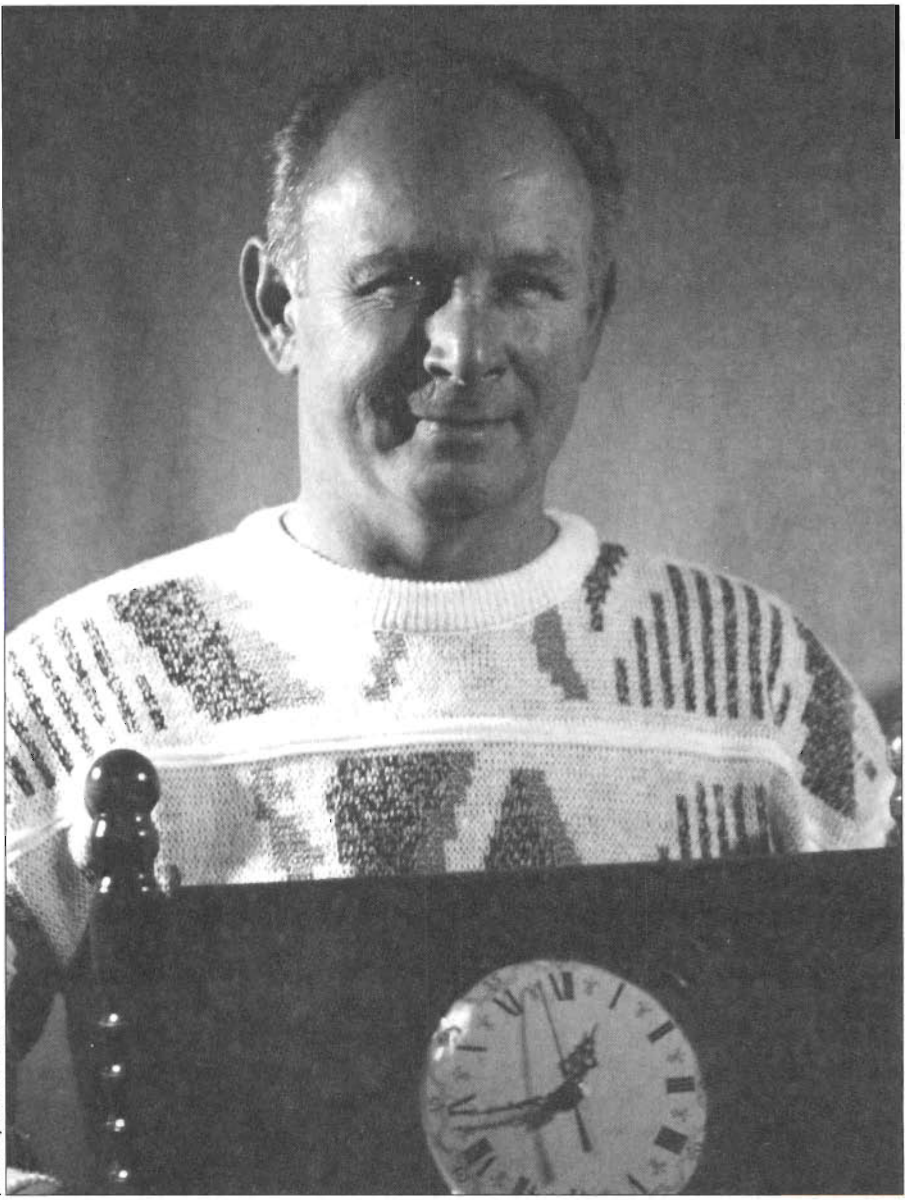
Reif, who is 50 years old, suffers from retinitis pigmentosa, an inherited disease. From the 20/20 vision he had when he graduated high school, he suffered a gradual loss of vision over the next several years. He retired from Hesston Corporation, in 1986 after working there for nearly 30 years. His job was working with metal, and in his free time, he studied metalworking magazines. "At that time, I had no interest in wood," he relates, "Now I wish I had spent that time on woodworking magazines."

After retiring, he bought a wood lathe and started "playing around" with woodworking. His wife encouraged him to build a workshop, and soon his hobby turned into a full–time job.

His goal in woodworking is perfection and accuracy—a goal he says he is usually able to meet because of the care he has taken to buy the right tools and then modify them to meet his needs. "If your tools are Mickey Mouse, they're not going to cut it," he explains.

Deciding that there was not enough challenge in working with soft woods, "because I could do that with my pocketknife," Reif chose instead to focus on hardwoods native to central Kansas (mostly walnut, birch and cherry).

It is that same love of a challenge that keeps Reif from using a copy lathe. "I don't want to make one piece and then 100 more just like it. It's more of a challenge to make each one different," he said. For example, each of the dozens of


photos by Connie Humes

Dale Reif poses with his favorite mantel clock.

Kathy Hackleman is a freelance writer in McPherson, Kansas.

Reif uses a homemade disk sander to shape his pieces.

rolling pins he has made is different in the types of wood used, the length, the diameter and the handles.

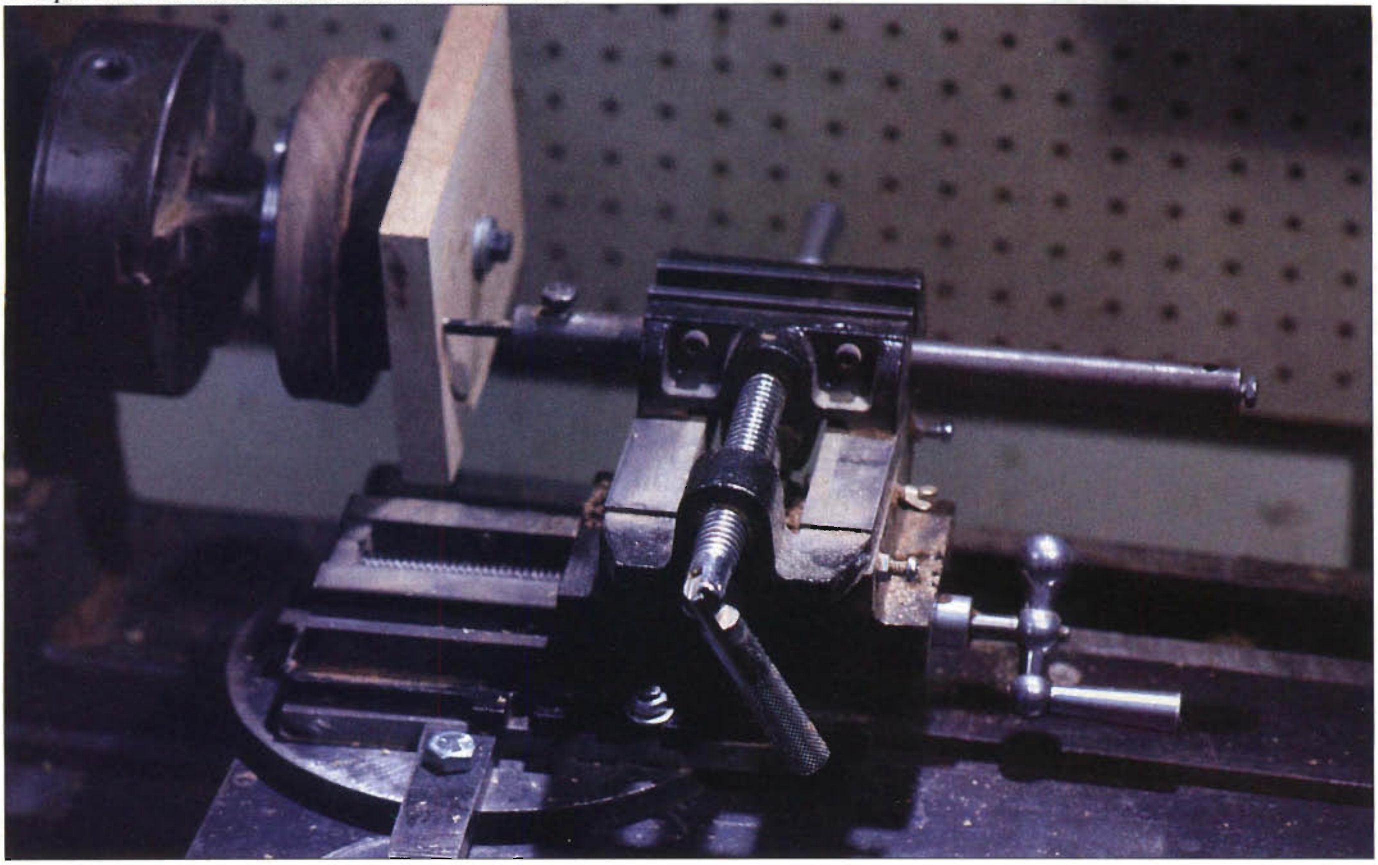
Likewise, he doesn't like to make something someone else has designed. Each of his creations has come from his imagination combined with the memories of how he thinks the finished product will look. "If you can't build something out of your imagination, I can't see any challenge to doing it," he said.

Reif remembers the characteristic colors of the wood he uses, which he can identify by feel and smell, and he puts them together in color patterns he thinks would be effective.

Having mastered the "easy" items such as bowls, rolling pins, trays and lazy susans, Reif has gone on to greater challenges. Some recent projects have included matching sets of end tables, musical jewelry boxes, and clocks, all of which he has designed himself.

In addition to the basic problems of cracks, warps, and splits that face any wood craftsman, Reif also faces problems and dangers that are unique to him because of his blindness. Splinters are a constant source of discomfort because he must spend so much time feeling the wood to identify it, and he cannot see a

In his special setup at the lathe, Reif has incorporated a machinist's vise to hold and move the tool.



rough splinter until he jams his finger into it.

More dangerous, however, are the power tools that he must work with to get the basic shape before hand sanding. To avoid getting chips of wood and sawdust in his eyes, Reif always wears a face shield that protects his face and neck. But that still leaves the problems of the saw and grinder themselves. As he gets ready to saw, he measures his wood for the exact length he needs, using a ruler with raised markings or one of several pre–cut iron pieces that serve as measurement guides. Always leaving his left hand on the wood, he brings his right hand up to gauge the distance to the blade before turning on the machine. "You know the saw will always come straight out. My left hand is always safe. The only time I would have trouble is if the blade is dull, it has a tendency to grab the wood instead of sawing straight through," he said.

The only time he makes allowances for his blindness is when sawing a piece that is less than one inch. "That's getting too close," he said. For the tiny pieces, he clamps the piece to be cut to another piece of wood before cutting.

When sanding, he is just careful to keep his fingers away. "I always know exactly where it's at," he said, adding "I wouldn't tell the next blind guy to do this, but it works for me."

Named "Unseen Creations," Reif's works would be worth having for their beauty alone, but as reminders of what we can accomplish if we choose to do so, their value is immeasurable. PW

photos by Connie Humes

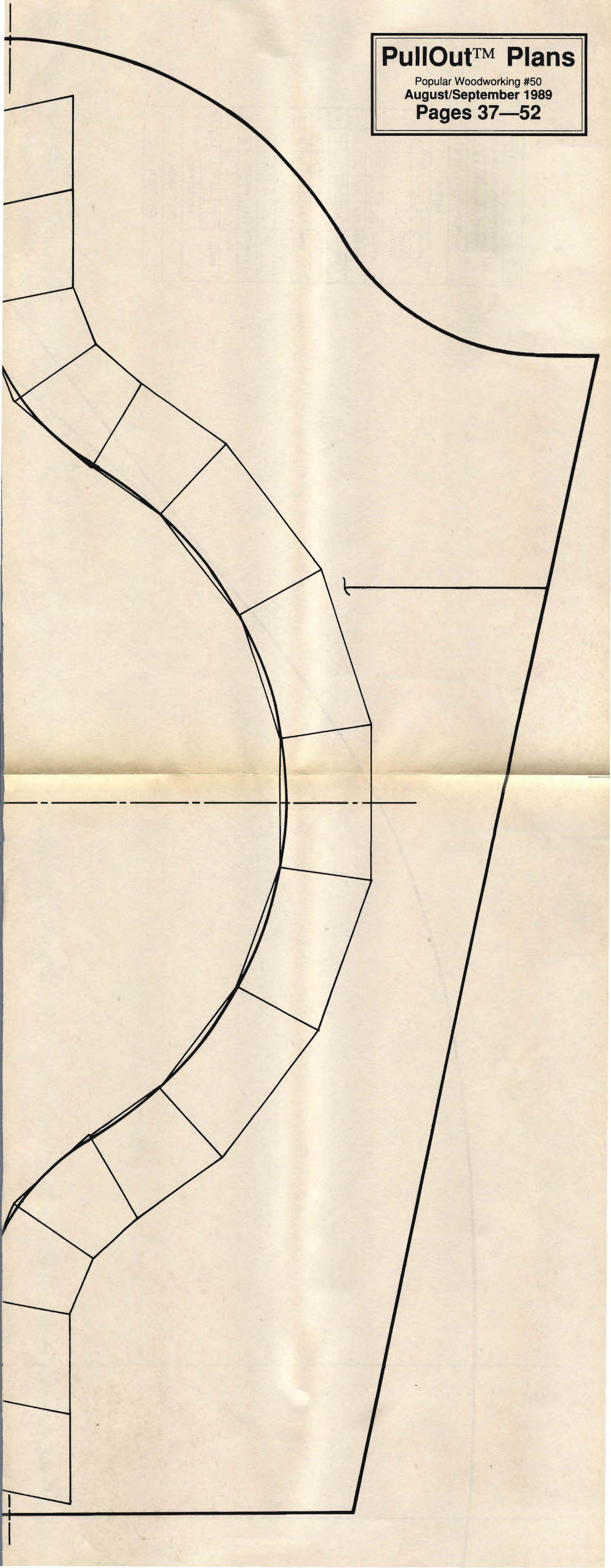
This walnut candy dish is inlaid with a filler of maple.

A walnut candlestick

This square clock with a round face is made out of walnut.

PullOut™ Plans

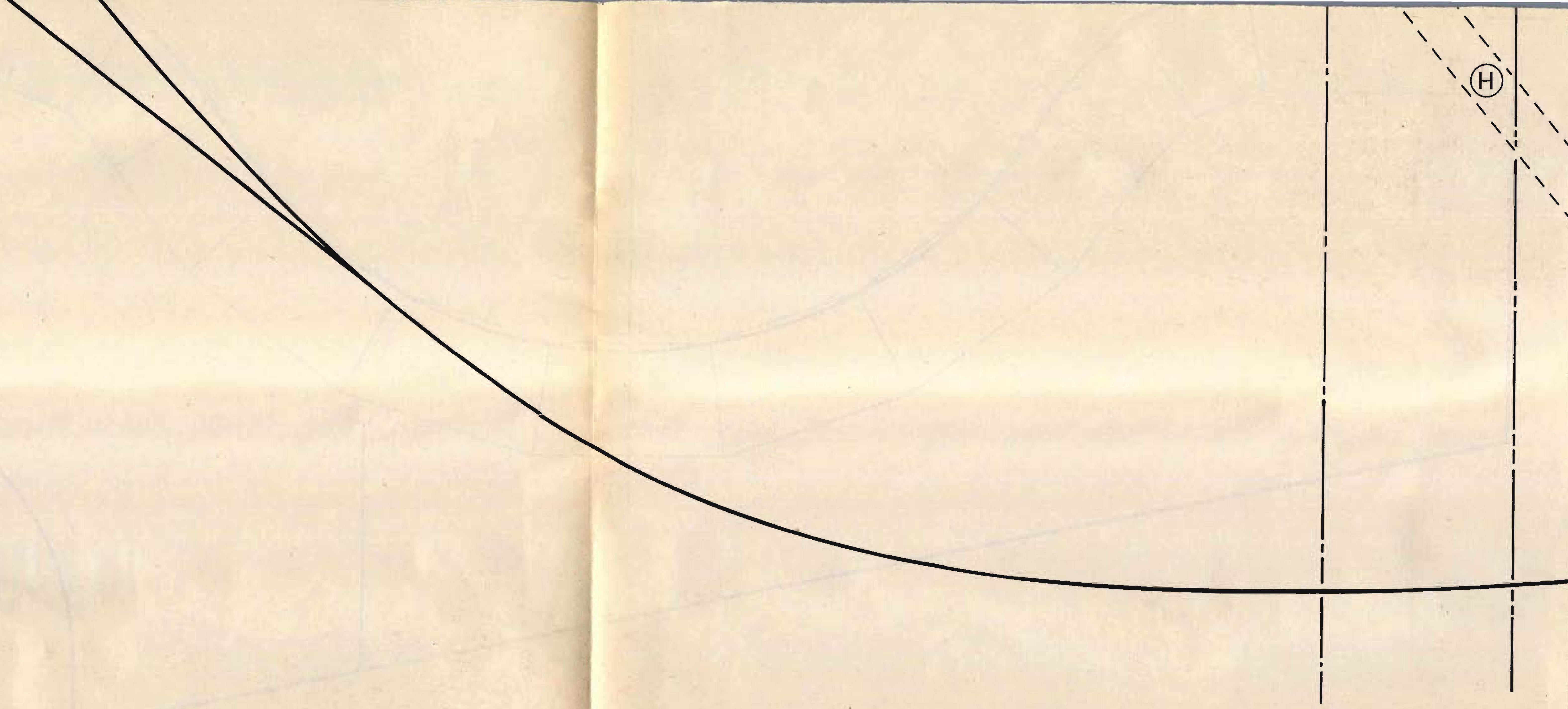
Popular Woodworking #50
August/September 1989
Pages 37—52

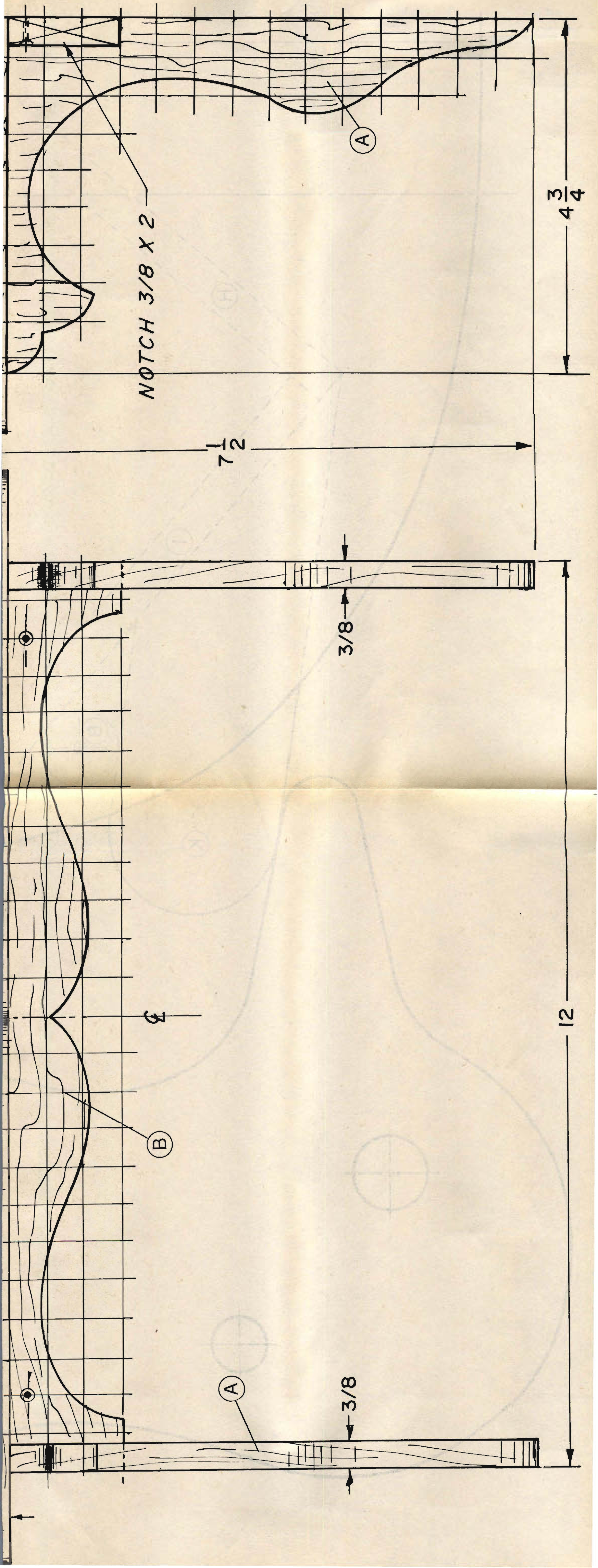


Rocky Duck

Cutting List

		Rough Size			
Qty	Part	T	W	L	Piece
2	A	$1\frac{1}{2}$"	$11\frac{1}{4}$"	27"	wings
1	B	1" diameter		$13\frac{1}{2}$"	support rod
1	C	$1\frac{1}{2}$"	$11\frac{1}{4}$"	17"	seat
2	D	$\frac{3}{4}$"	$1\frac{1}{2}$"	$7\frac{3}{16}$"	tail feathers
1	E	$1\frac{1}{2}$"	$10\frac{7}{8}$"	$11\frac{1}{4}$"	head
1	F	$\frac{3}{4}$" diameter		$6\frac{3}{4}$"	handle
1	G	$\frac{1}{2}$"	$11\frac{1}{4}$"	$10\frac{5}{8}$"	seat back
1	H	$\frac{1}{2}$"	$11\frac{1}{4}$"	$7\frac{3}{4}$"	leg rest
1	I	$\frac{1}{2}$"	$11\frac{1}{4}$"	$7\frac{1}{2}$"	foot rest
1	J	$1\frac{1}{2}$"	$2\frac{1}{4}$"	$11\frac{1}{4}$"	leg rest support
1	K	$1\frac{1}{2}$"	$2\frac{1}{4}$"	$7\frac{7}{8}$"	bumper
Supplies					
4	#12 × $3\frac{1}{2}$" flat head wood screws				
2	#12 × 4" flat head wood screws				
2	#10 × $2\frac{1}{2}$" flat head wood screws				
	finish nails				





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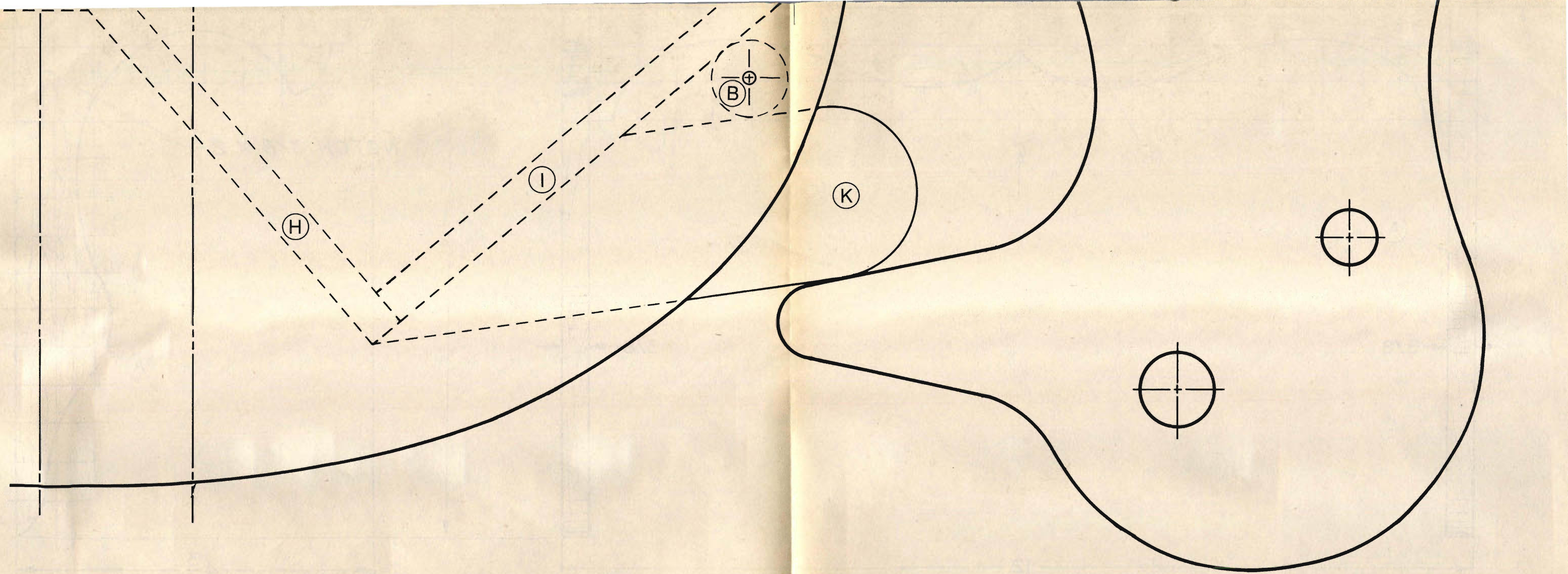
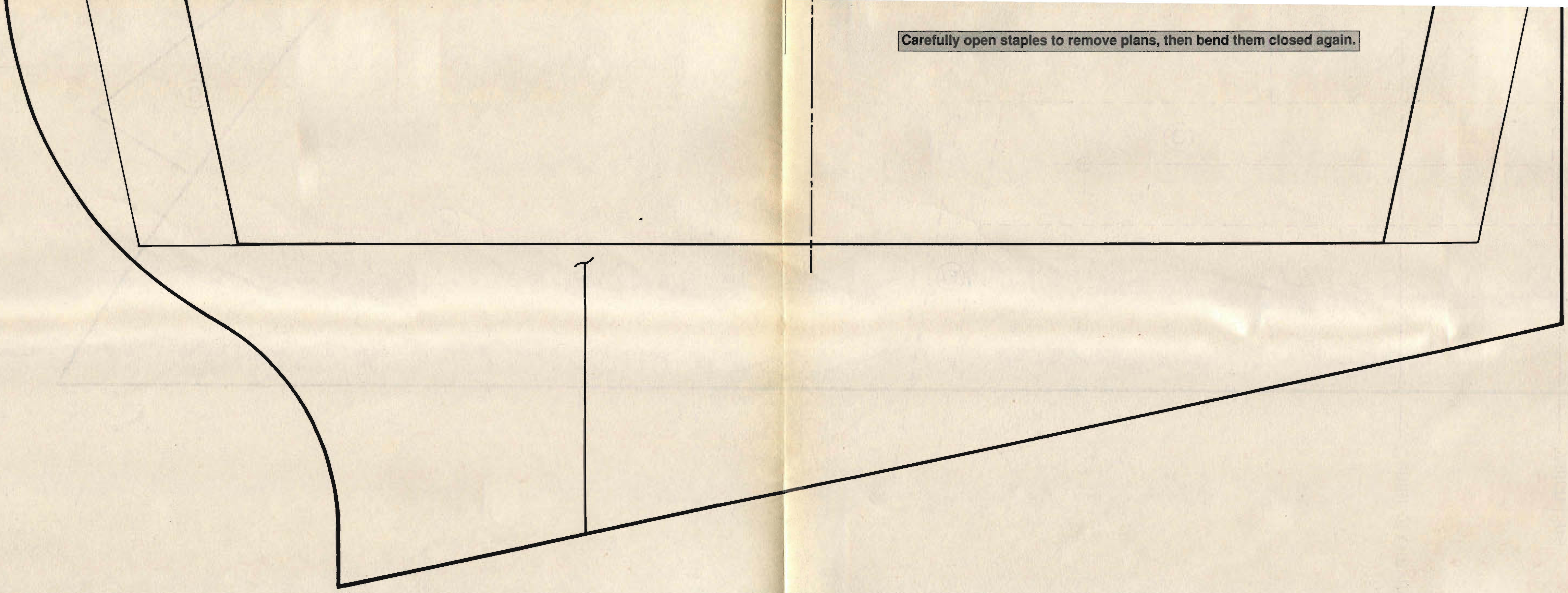
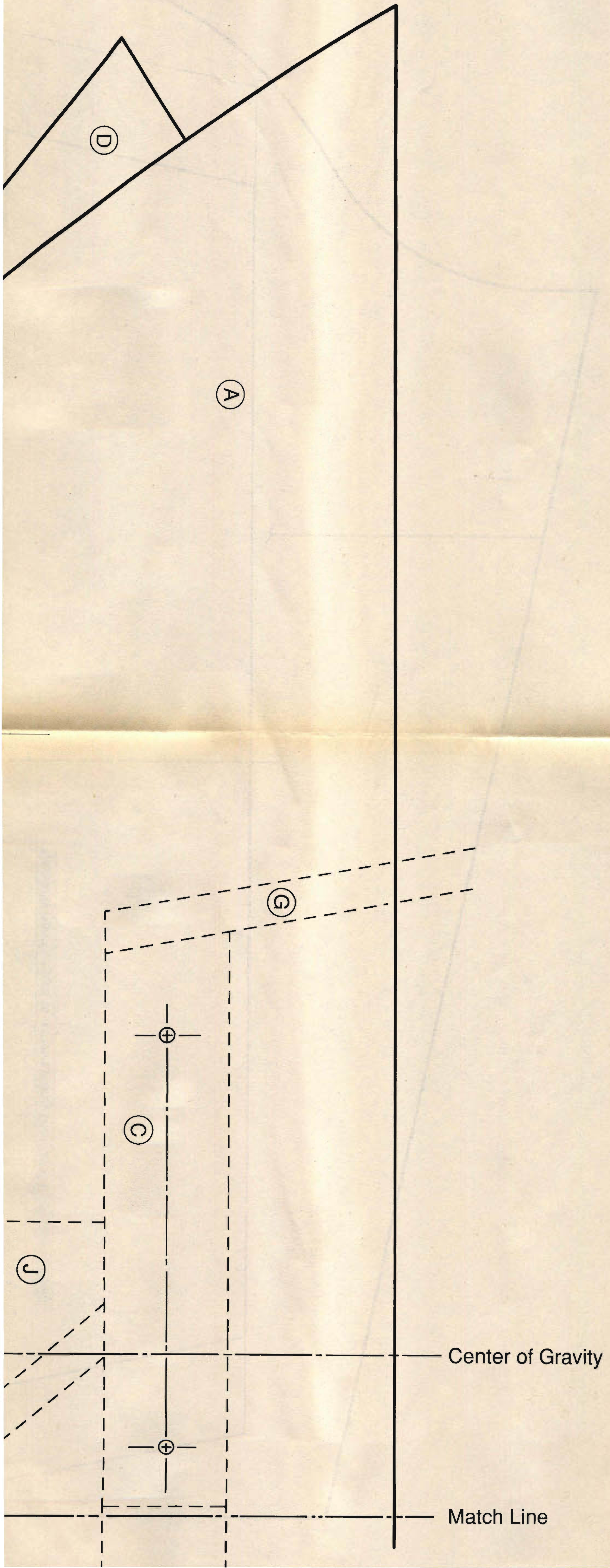




Carefully open staples to remove plans, then bend them closed again.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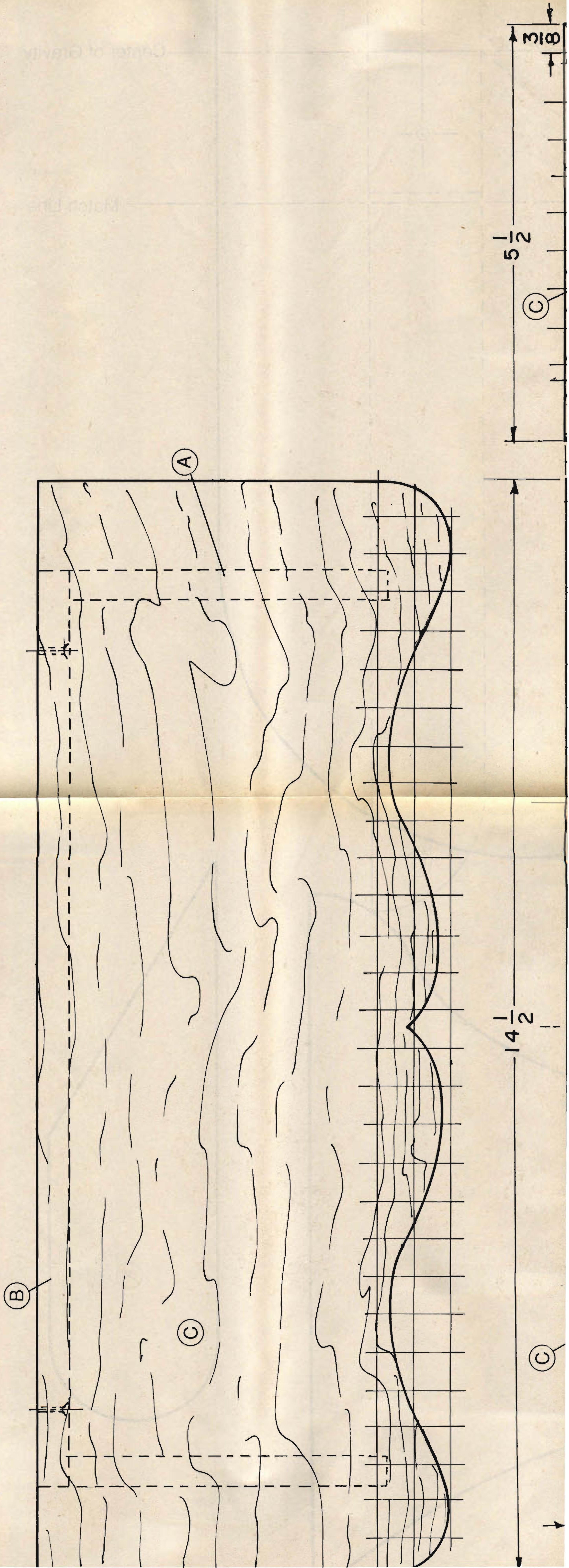
Center of Gravity
Match Line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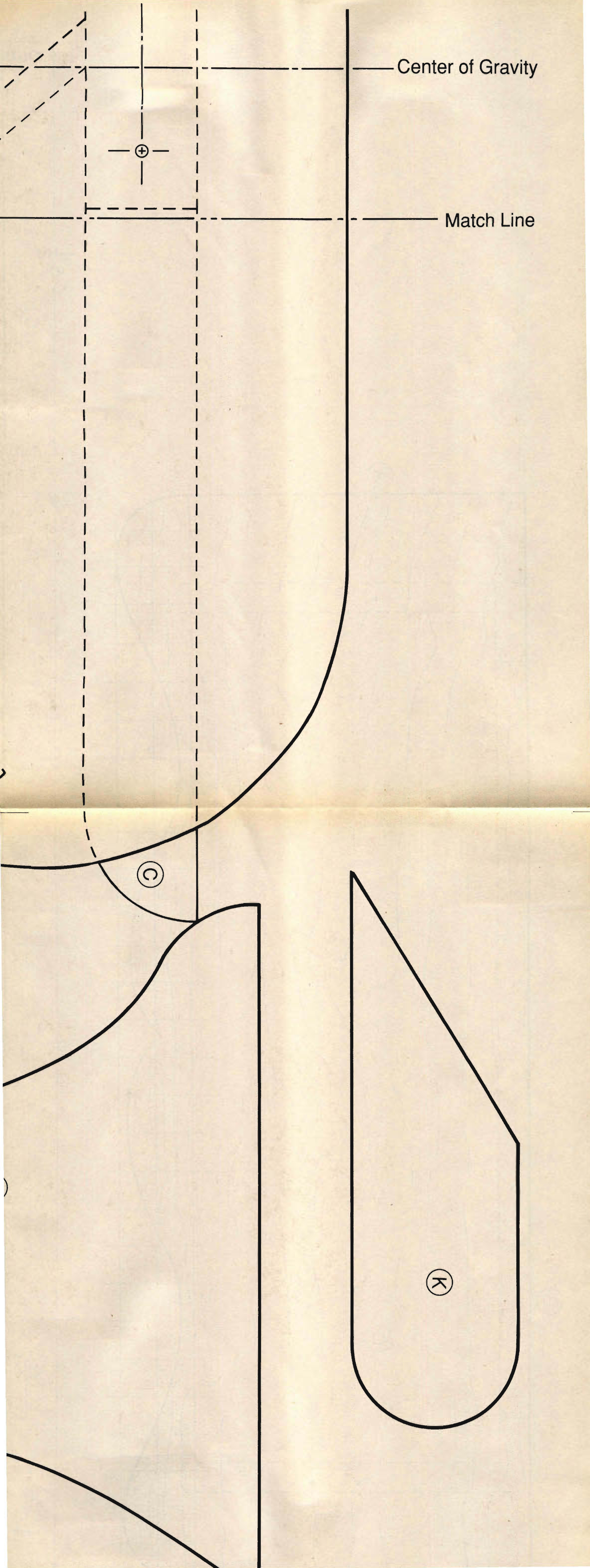
Center of Gravity
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photo by Deborah Porter

Colonial Shelf

by John A.Nelson

Our forefathers were very imaginative when it came to the design of wall shelves. Their sense of proportion was superb, and through the years, the graceful and beautiful lines of their early shelves have remained unsurpassed. Even today, with our computer–assisted design capability, we have not improved upon their lines and designs.

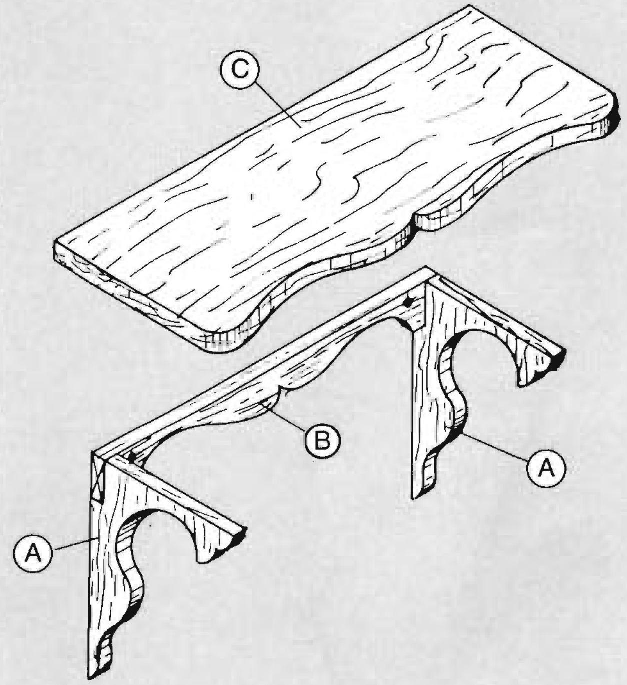
This early shelf design, dating from the eighteenth century, was found in Maine. It is fairly small, and is perfect for holding a clock or other small object. I was attracted to it because of its smooth, graceful lines. It can be made of any kind of wood, soft or hard. Hardwood makes a more impressive project and can be finished much more beautifully.

Begin by transferring to wood the PullOut™ Plans for the four pieces—two sides (A), one brace (B) and one shelf (C). Cut out and sand the two sides together so they will be an exact pair. After cutting out the brace, countersink two 1/8" holes in it for mounting the finished shelf on the wall.

Glue the brace to the notches in each side piece and check to be certain that all pieces are square before the glue sets.Once the shelf is glued and nailed, round the edges very slightly with sandpaper.

Prepare the project for finishing by sanding all over with a fine grade of sandpaper. Stain the shelf, if you wish, with a color of your choice, and complete it with any good grade of low–gloss finish. Apply a coat of paste wax, and your shelf is now ready for the next century. PW

John A. Nelson is a woodworker and the author of 26 books, including Woodworker's Jackpot *(TAB Books, Monterey Lane, Blue Ridge Summit, PA 17214).*



See the PullOut™ Plans section for full–size patterns.

illustrations by the author

Colonial Shelf					
Cutting List					
		Finished Size			
Qty	Part	T	W	L	Piece
2	A	3/8"	4 3/4"	7 1/8"	sides
1	B	3/8"	2"	12"	brace
1	C	3/8"	5 1/2"	14 1/2"	shelf

A Popular Woodworking Project

Rocky Duck

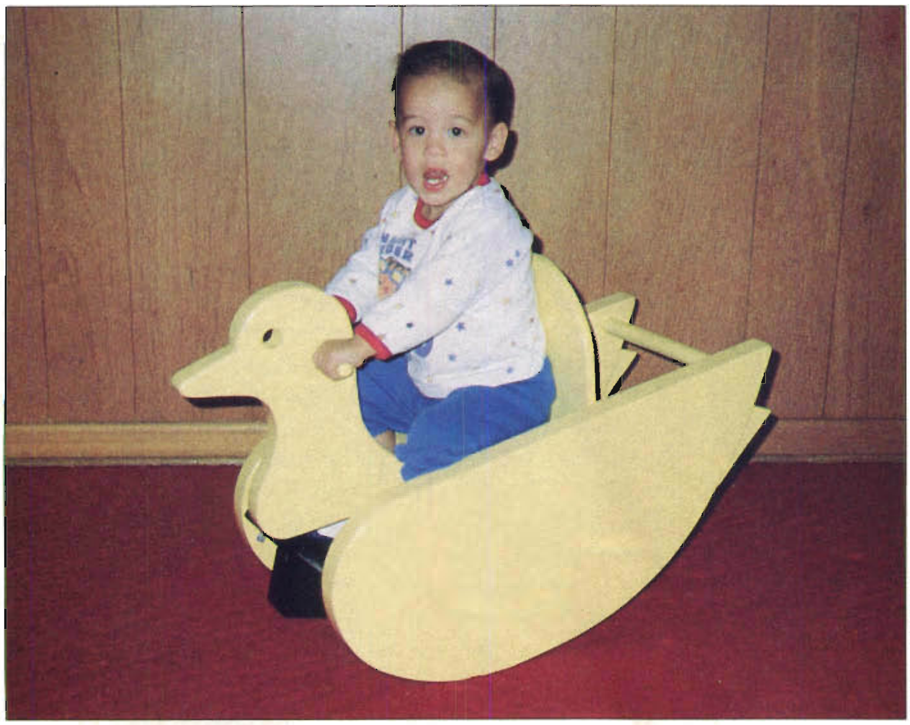


photo by the author

by Howard V. French

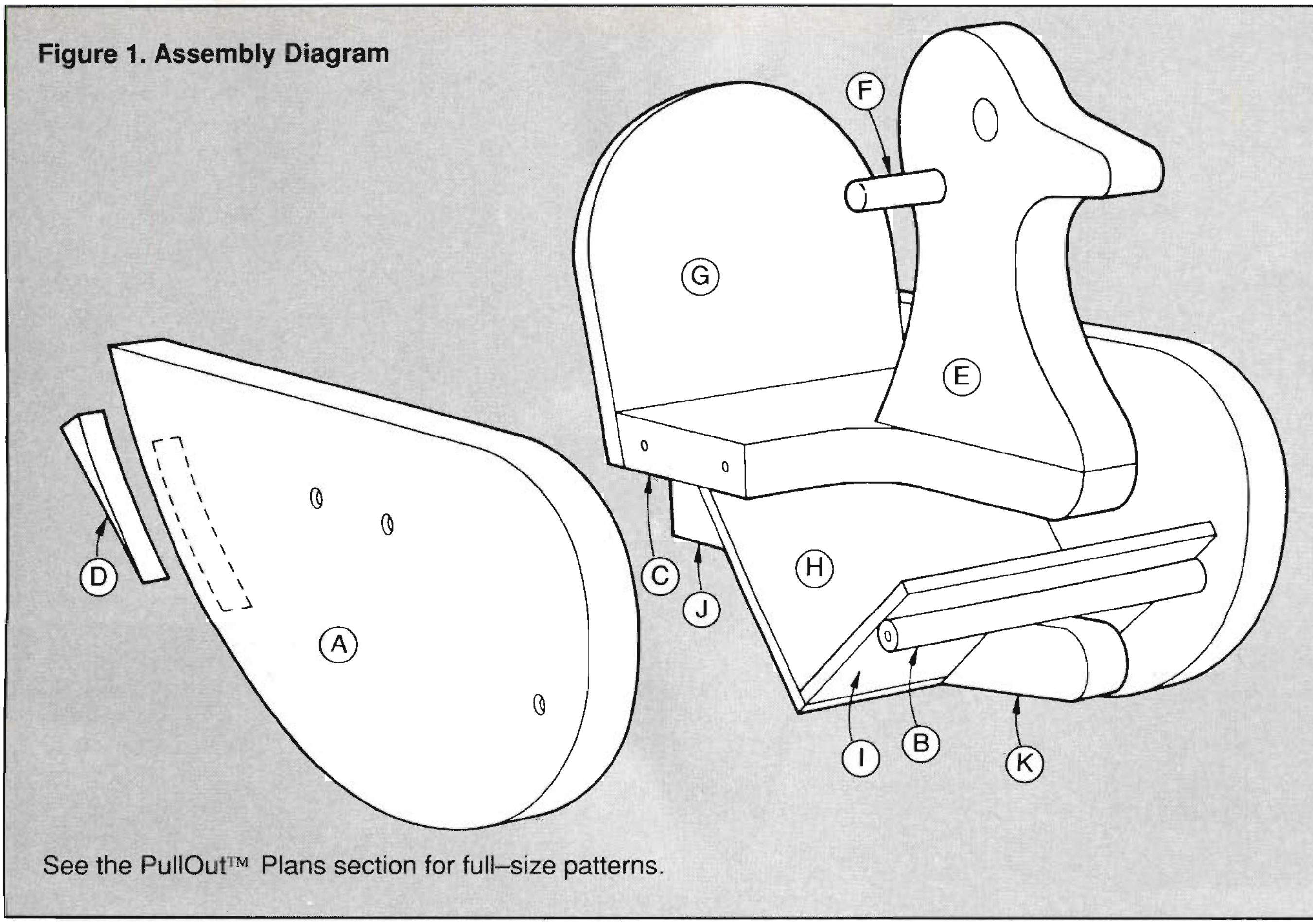
Rocky Duck is a sturdy, inexpensive and easy–to–make riding toy that will delight the pre–school set. Excellent rocking surfaces are provided by the curvature of the wings. Two–by–twelve material makes for wide "tread" and easy operation on carpeted floors, and also eliminates any need for cross–bracing between rockers. The "tail feathers" near the wing tips prevent even the most energetic little rockers from tipping over backward.

Start the project by transferring to wood the wing pattern from the full–scale PullOut™ Plans in the center of the magazine. Cut out one wing (A) and use it as a pattern to lay out the other. Stack and clamp the two wings together securely, and smooth them with a belt sander.

Since the left and right wings are

Howard V. French lives in Abeline, Texas where he spends his time dreaming up woodworking project ideas.

Figure 1. Assembly Diagram



See the PullOut™ Plans section for full–size patterns.

illustrations by Tom Larson

identical until the holes are drilled, choose the best surface of each for the outer sides. Drill 1" holes to a depth of 1-1/8" for installing the support rod (B) later. (A Forstner bit comes in handy here.) Then counterbore holes for the 3-1/2" flat head wood screws which will later attach the wings to the seat (C). Now make the tail feathers (D) as shown in the PullOut™ Plans. To ensure that the curved surfaces of wing and tail feather pieces meet precisely, lay a wing on the stock, trace the curve and cut. Align the centerlines of the tail and wing pieces and attach the tails with glue and a finish nail through each.

Next, lay out the pattern for the head (E) from the PullOut™ Plans and cut it out. Locate and drill 1/8" pilot holes through for the eye and for the handle (F). Follow the pilot holes with a 1" paddle blade bit for the eye and a 3/4" paddle blade bit for the handle, drilling to a depth of about 1". Then turn the head over and follow the pilot holes until through. This procedure leaves a clean hole on both sides of the material.

Cut the seat (C) to the rough dimensions in the cutting list, and bevel the back edge as shown in Figure 1. After ripping the bevel, cut the seat to its final shape (see Figure 2). Align the head with the seat and counterbore holes for two 4" flat head wood screws. Then fasten the head onto the seat.

Round both ends of the handle (F) and install it through the head piece as shown in Figure 1. Lay out and cut the seat back (G) from 1/2" plywood and screw and glue it to the seat.

Cut the leg rest (H) and the foot rest (I) from 1/2" plywood and bevel the back edge of the leg rest. While the saw blade is tilted, rip the edge of the leg rest support piece (J) to the angle shown in Figure 1. Make the bumper (K) from the pattern in the PullOut™ Plans; then glue and finish–nail these pieces together as a sub–assembly.

Next, attach the left wing to the seat with glue and two 3-1/2" screws. Chamfer the ends of the support rod (B), apply glue to one end, and insert it into the 1" deep hole you drilled earlier in the left wing.

Now fit the foot rest and bumper sub–assembly into place. With the leg rest (H) and the leg rest support (J) firmly against the bottom of the seat, countersink holes for 2-1/2" wood screws through (J) and into (C). Apply glue to the mating surfaces and install the screws.

Apply glue to the remaining end of the support rod and install the right wing. Then drive two small finish nails through the foot rest and into the support rod.

Sand all exposed corners and finish the completed assembly as desired. Rocky Duck is now ready for years of faithful service. **PW**

Rocky Duck

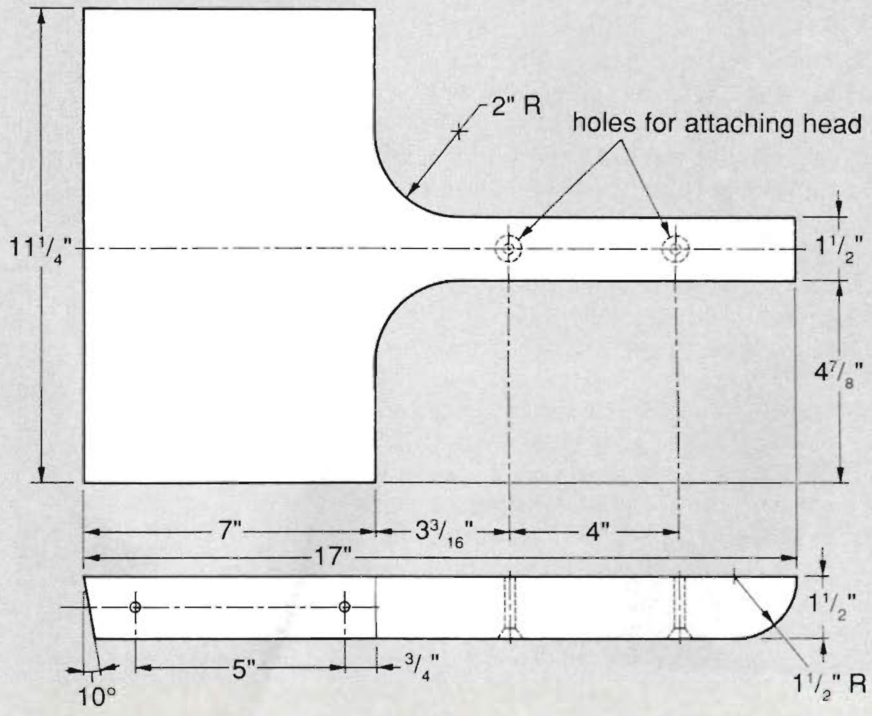
Cutting List

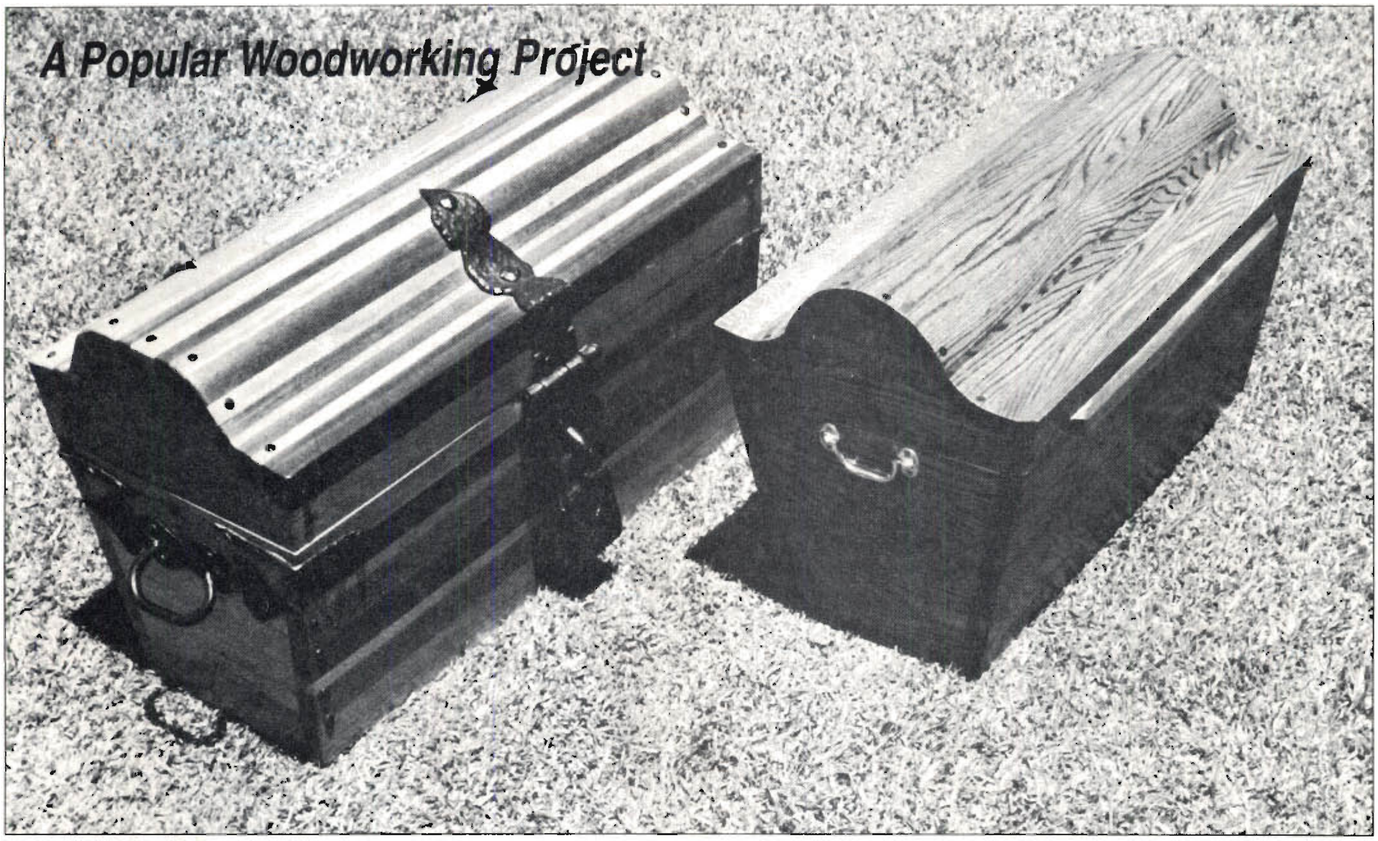
Qty	Part	Rough Size T	W	L	Piece
2	A	$1\frac{1}{2}$"	$11\frac{1}{4}$"	27"	wings
1	B	1" diameter		$13\frac{1}{2}$"	support rod
1	C	$1\frac{1}{2}$"	$11\frac{1}{4}$"	17"	seat
2	D	$\frac{3}{4}$"	$1\frac{1}{2}$"	$7\frac{3}{16}$"	tail feathers
1	E	$1\frac{1}{2}$"	$10\frac{7}{8}$"	$11\frac{1}{4}$"	head
1	F	$\frac{3}{4}$" diameter		$6\frac{3}{4}$"	handle
1	G	$\frac{1}{2}$"	$11\frac{1}{4}$"	$10\frac{5}{8}$"	seat back
1	H	$\frac{1}{2}$"	$11\frac{1}{4}$"	$7\frac{3}{4}$"	leg rest
1	I	$\frac{1}{2}$"	$11\frac{1}{4}$"	$7\frac{1}{2}$"	foot rest
1	J	$1\frac{1}{2}$"	$2\frac{1}{4}$"	$11\frac{1}{4}$"	leg rest support
1	K	$1\frac{1}{2}$"	$2\frac{1}{4}$"	$7\frac{3}{8}$"	bumper

Supplies

Qty	Item
4	#12 × $3\frac{1}{2}$" flat head wood screws
2	#12 × 4" flat head wood screws
2	#10 × $2\frac{1}{2}$" flat head wood screws
	finish nails

Figure 2. Dimensions of the seat





Make a Pirate Chest

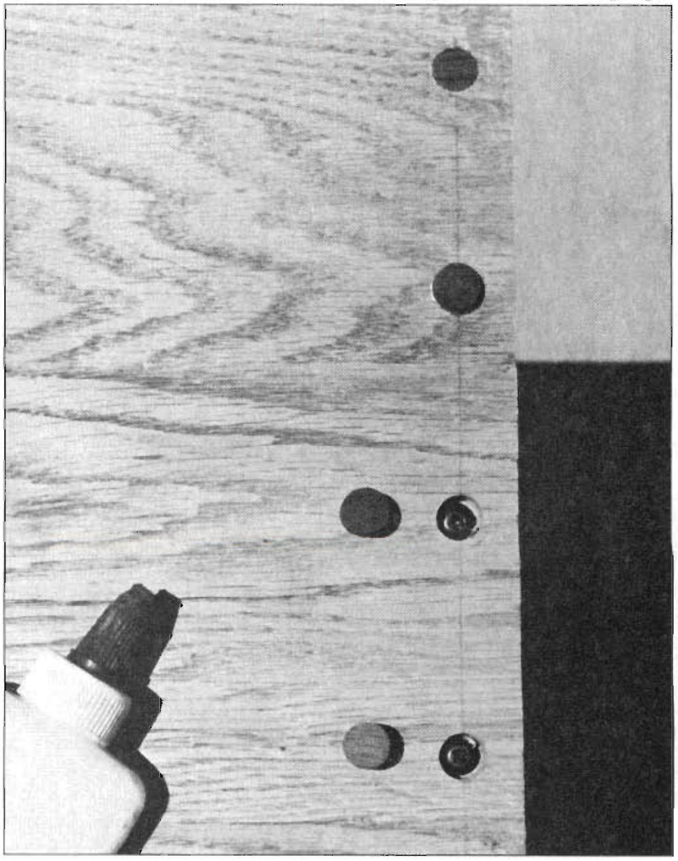
by Warren Asa

Even as a boy I liked pirate chests. I had no great interest in things nautical, but a pirate chest had such rakish angles and curves with real flair that I found them things of wondrous beauty. Why pirates hit on this unique design I have never known. Perhaps the shape added strength or discouraged stacking, or perhaps pirates had a greater appreciation of aesthetics than we imagine. I made my first pirate chest some years ago and liked the way this useful chest dominated a room and became an instant conversation piece. Making one is rather a different sort of project, but it's good solid woodworking throughout, so if you like that you *will* enjoy making one.

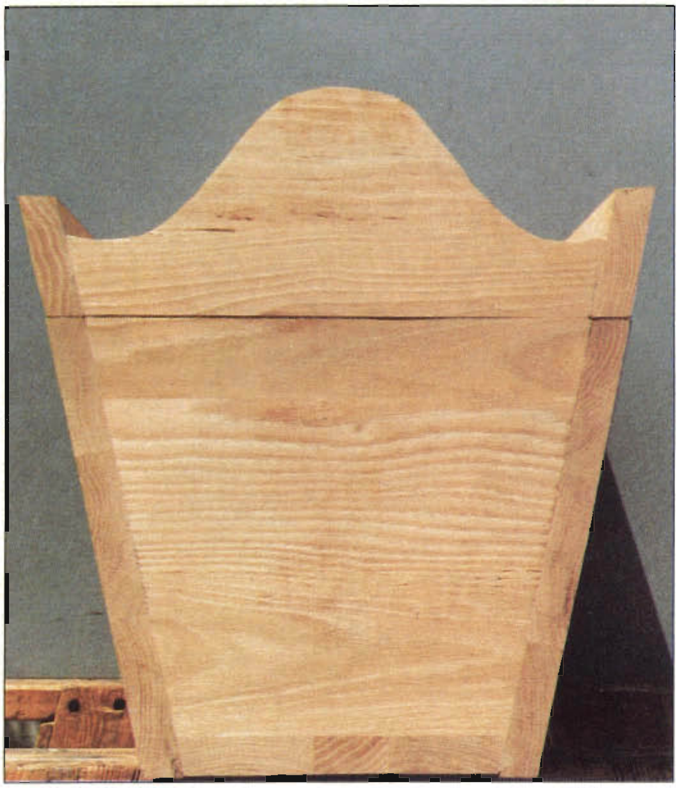
The chest shown under construction here was made of red oak that had been sawn and planed to 1-1/4" × 5". You can use any cabinet-grade wood that you have or can acquire. Now, don't do your shopping from the cutting list, just get 37 board feet of 6/4 material, and get it in lengths that are multiples of 30" so you'll have extra length for trimming. Of course you don't have to build your pirate chest this size. Consider a smaller one for a child's toy box or an even smaller one for jewelry. If you make a larger one, I suggest it be for a big room because a pirate chest can seem to take over a room.

Most of the construction is just butt joinery but the curved lid is a little tricky. Not that it's all that difficult; it just requires some accurate measurements and sawing, and some planing and

Screw the sides to the ends, and fill the holes with plugs.



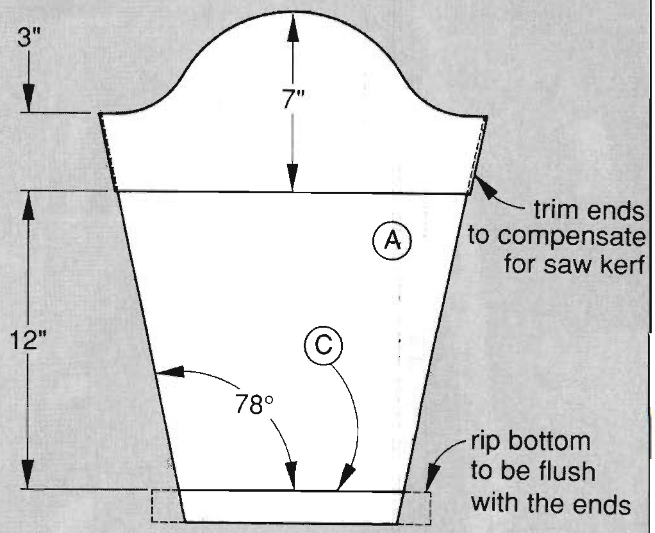
Warren Asa has been whittling and woodcrafting since his scouting days. He specializes in native American folk craft.



Determine the width and the angle of the bevel by measuring from your actual end piece.

photos by the author

Figure 2. Key Dimensions



trim ends to compensate for saw kerf

rip bottom to be flush with the ends

See the PullOut™ Plans section for full-size patterns.

scraping to smooth down the finished product. The key to designing a pirate chest is to make a full-size template of the end piece in cardboard; you'll find a pattern for this in the PullOut™ Plans section in the center of the magazine. This size end piece will be appropriate for chests that are from 28" to 34" long.

Start the actual construction by gluing up the panels for the ends (A), sides (B), and bottom (C). Your end panel (A) can be quite a bit shorter than the length given in the cutting list if you alternate the layout of the pattern as shown in Figure 1. Use a portable circular saw to cut the sloped sides of the end pieces, then bandsaw the top profile. Finish-shape the two pieces as one unit, so they will both be the same. When you cut the lid portion from the end, you'll need to trim a bit from its ends to account for the saw kerf (see Figure 2.)

Dress the panels and cut them to length, and while that stop is set up, cut the material for the lid to length, too. Cut more than you think you will need because there is some waste involved in making the lid.

To rip the panels to width set your table saw blade to 78°, or better yet, the actual slope of your finished end pieces (on paper they're 78°; what are they in reality?). Rip one edge of the bottom panel (C), then turn it end for end and rip it to the width that matches the bottom of your end piece (see Figure 2).

Use the same blade angle to trim one edge of each side panel (B). Measure the width you need to go from the rim of the box down over the bottom, and flip these pieces over to rip to that final width. You want both edges parallel. Rip the two lid sides (D) to width in the same manner.

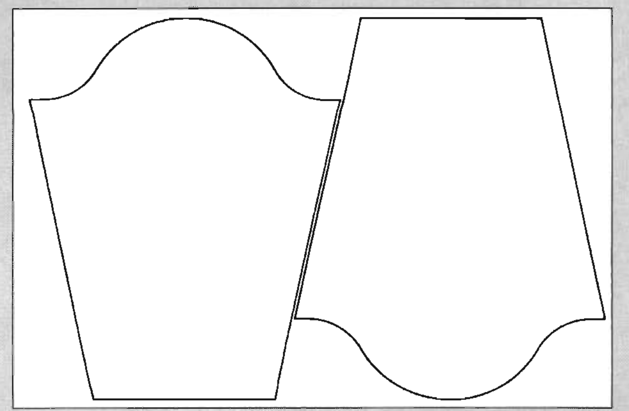
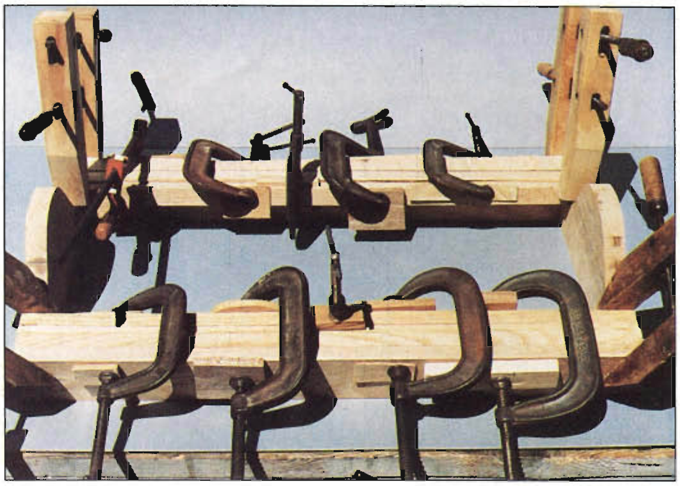
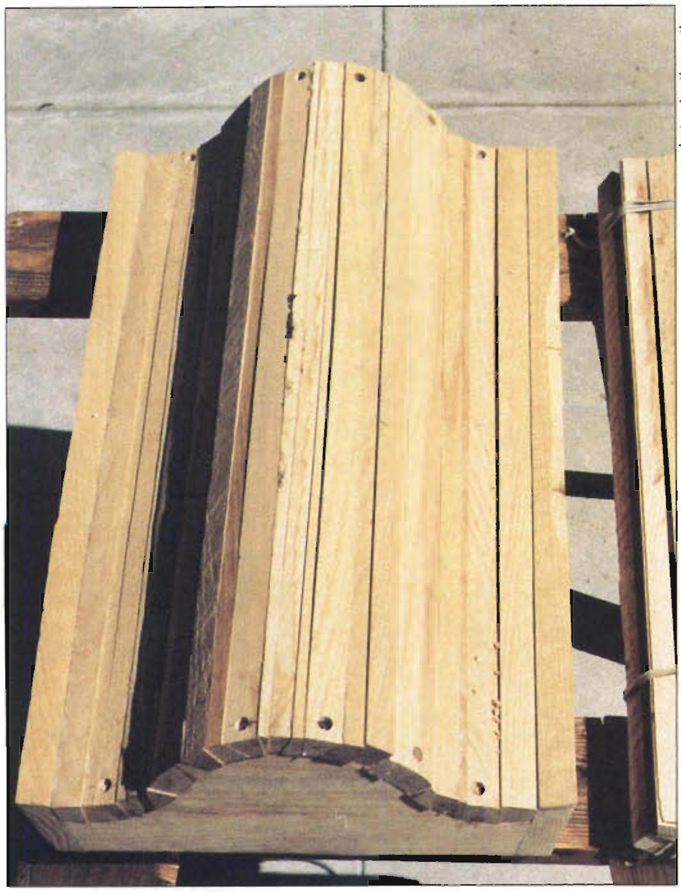


Figure 1. Flip the pattern end-for-end to use less wood.

illustrations by Tom Larson

You can use clamps to hold the first several strips, after that you'll need to screw them to each other and to the ends.





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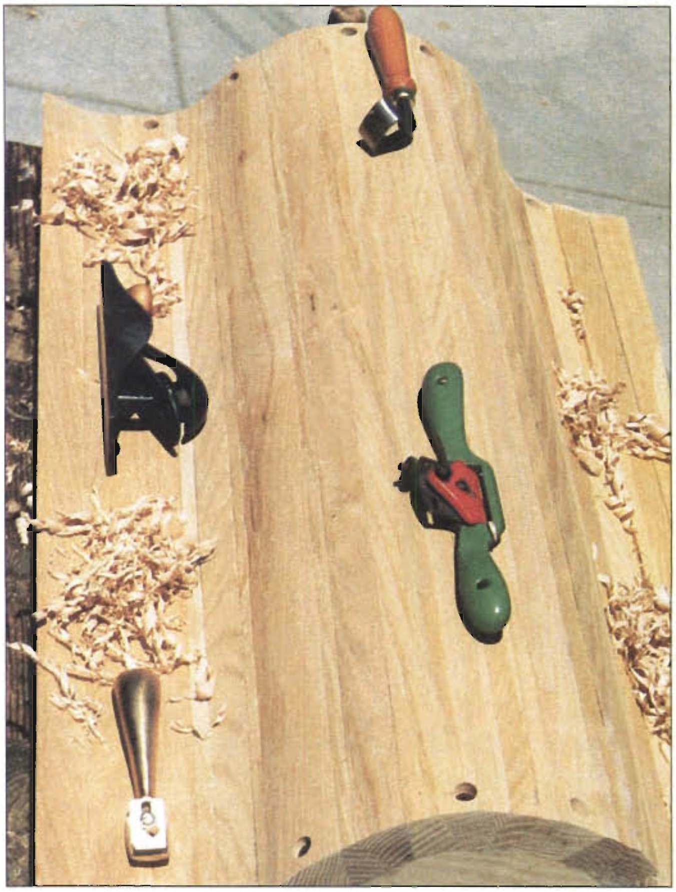
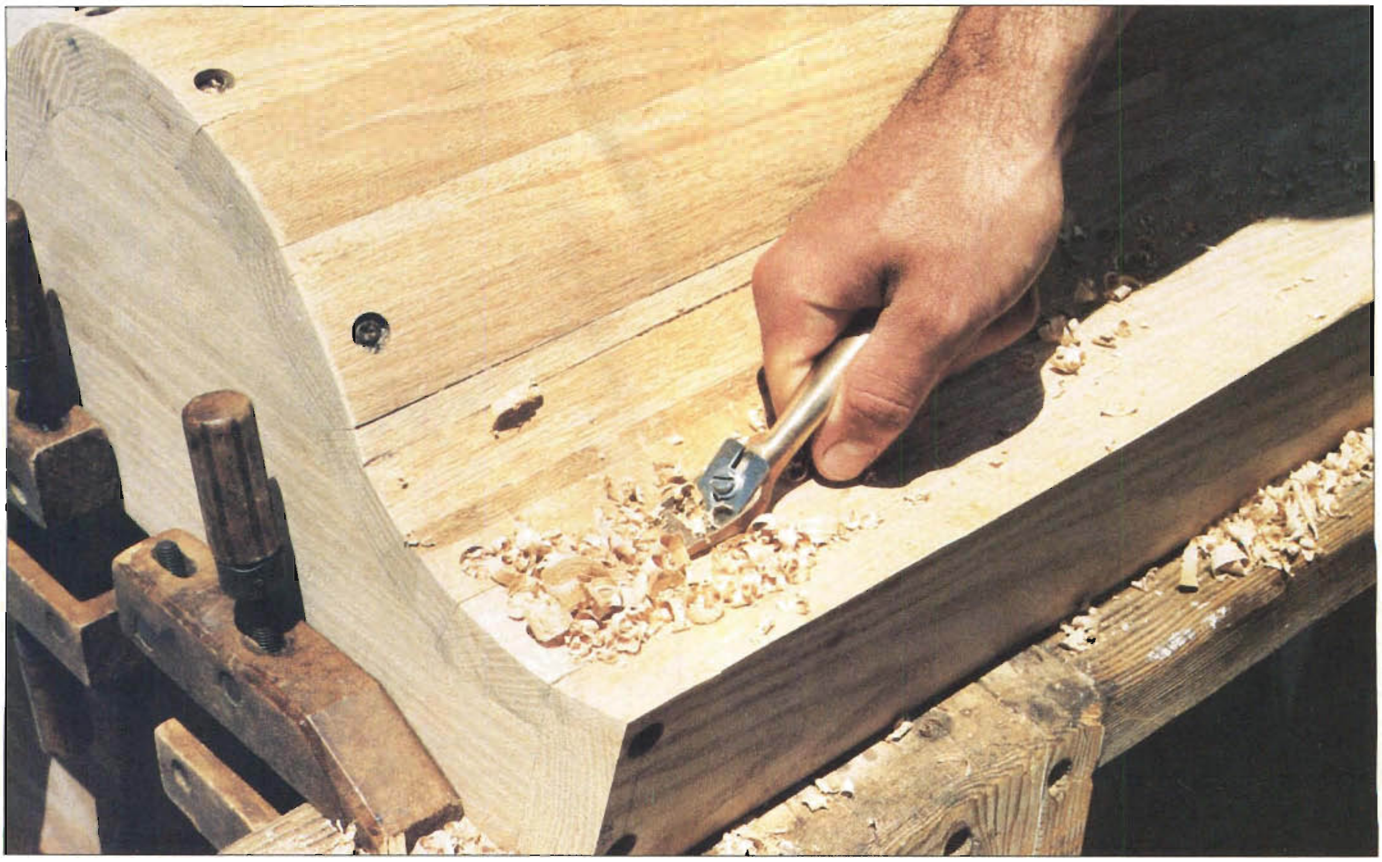


Cut each pair of strips to match the situation and rough-shape their bottoms to fit the curve of the ends.

Some of the tools used for shaping the lid, clockwise from the top: a scorp, a spokeshave, a spoon-bottom carving plane, and a bench plane.

Use a scorp, a carving plane or just a gouge to smooth the concave surfaces, and follow up with a curved scraper.



Pirate Chest

Cutting List

		Rough Size			
Qty	Part	T	W	L	Piece
1	A	$1^{1}/_{4}$"	21"	32"	end panel
2	B	$1^{1}/_{4}$"	14"	29"	side panels
1	C	$1^{1}/_{4}$"	11"	29"	bottom panel
2	D	$1^{1}/_{4}$"	$4^{1}/_{2}$"	29"	lid sides
20	E	$1^{1}/_{4}$"	2"	29"	lid strips
1	F	$1^{1}/_{4}$"	$1^{1}/_{2}$"	23"	handle

Supplies

2	3" butt hinges
2	brass handles
1	roll top desk lock set

Sources

Spoon–Bottom Carving Plane #08J03 or
$100^{1}/_{2}$ Hollowing Plane #02831 from:
Woodcraft Supply Corp.
P. O. Box 4000 Dept. PW89
Woburn, MA 01888

Brass Handles # D6902 and
Roll Top Desk Lock Set #D6804 from:
The Woodworkers' Store
21801 Industrial Blvd., Dept. PW
Rogers, MN 55374-9514

Sand the inside surfaces of these pieces before you assemble the chest. I fastened it all together with 3" round head sheet metal screws, and of course, glue. The screw heads were recessed 1/2" in 1/2" diameter holes. I filled the holes with black walnut plugs because I like the color contrast between the dark wood and the oak. Use any convenient spacing.

Assemble the lid frame consisting of the lid sides (D) and the two curved–top ends, with glue and screws. Make sure this frame is square or at least lines up with the box.

Now comes the fun part of building a pirate chest. Constructing the curved lid is a true woodworker's challenge, but don't be intimidated because it is not that tricky. Think each step through before you act, measure twice before you cut, and you will be OK.

My approach to forming the lid is to view it as a complex arch. The key to building an arch from an architectural point of view is a keystone and so I make a series of keystone–shaped pieces to cover the chest top. After making my first chest, I wondered if perhaps I was doing things the hard way. I thought about preshaping pieces for the lid like barrel staves, or of building up the top with very thin strips. But after serious consideration, I rejected all of these as being impractical for this job.

I measure the angle for the first piece, set the table saw and cut two pieces—one for each side. I rough–shape the bottoms of these pieces to fit the curve of the ends, and then glue and clamp them in place.

The secret is to eyeball the angle with your T–bevel, and rip the edge of the strip as close to it as you can. Then just take a plane to the bottom of the board and shape the ends to fit the curve. Don't worry about rounding the whole length of either surface at this point; there will be plenty of time for that. Just get the edges to fit pretty good, and shape the strips as needed.

At this point you run into one of the odd things about making the lid, namely that when you clamp these wedge–shaped pieces they have a tendency to creep. Clamps can help with this for a while. I continue to saw, glue and clamp in this manner until the clamping becomes difficult. At that point, I use flat head wood screws to fasten each subsequent strip to the piece next to it. [*Editor's Note: For best results, attach a single strip in the center and work your way down both sides to meet the strips you've already applied.*]

Build up the entire lid always striving for tight joints. When you finish this gluing, the top is pretty rough looking; lots of elbow grease will be called for to work it down. At the very apex of the lid is a convex curve which can be tackled with spokeshave and block plane. On each side, however, is a concave curve which requires an entirely different approach. My favorite tool for this is a spoon–bottom carving plane (see the source list at the end). This small tool can be used with one or two hands and allows you to sculpt just the curve you want. It provides you with the freedom of cut of a gouge but with the controlled cut of a plane. A hollowing plane will also work. Lacking either of these, a large gouge, scorp, or small, curved adze would seem the best bet. Curved spokeshaves are of no value because the handles get in the way. Do the final work on the lid with curved and straight scrapers. Naturally, all of the curves are just the reverse when you work on the underside of the chest lid.

Sand the outside of the chest, and fasten the hinges and lock. I used 3" butt hinges. Because of the angle on the front panel you may have to be a bit creative to make your lock mechanism fit. On this chest I reversed the lock and catch plate. I also drill holes for the handle hardware at this time but don't fasten it until after the finish is applied. All of the fittings on this chest are standard commercial hardware in brass. The larger pirate chest shown in one of the photos has custom–made hardware of black steel.

If you use a hasp to lock your chest it provides a convenient handle to raise the lid, but this design utilizes a built–in key lock. So the question I faced was how to lift the lid. I solved it in a way that doesn't alter the rakish lines. I added a strip of oak partway across the front of the lid. This strip was left over from making the keystone pieces for the lid. I carved a groove on the lower side to provide a good finger grip. It works quite well and is not obtrusive, but a brass handle on either side would have done the job equally well.

I finished this chest with Danish oil, but you can decide what finish you prefer. The larger chest was finished with polyurethane. The final jobs were attaching the handles and escutcheon plate for the keyhole, and attaching a cord to keep the lid from opening too far. If your chest is as large as this one, be sure to use heavy–duty handles. I also put a layer of cedar in the bottom for aroma and moth protection.

The days of the pirate were long ago and, happily, their needs have largely been forgotten; but they did leave us one positive legacy, their unusual chests. If you want to share in this bequest, this is the project for you. PW

A Popular Woodworking Project

A Sleek Mahogany Table Set

by Hugh Foster

Honduras mahogany lends itself well to the simple, clean lines of many contemporary furniture pieces, such as this elegant cocktail table/end table set. I chose the wood not only for this reason, but also because it was available in wide planks, which enabled me to make all the table tops from a single piece of 20"-wide stock. If you can't get material this wide, you'll need to glue up random widths to make your tops. Of course, you can make the tables from walnut, maple, or any species you like. They're designed to emphasize the natural beauty of the wood itself, unhindered by ornate details. Also, the simple design enables you to easily alter the length, width, and height to suit

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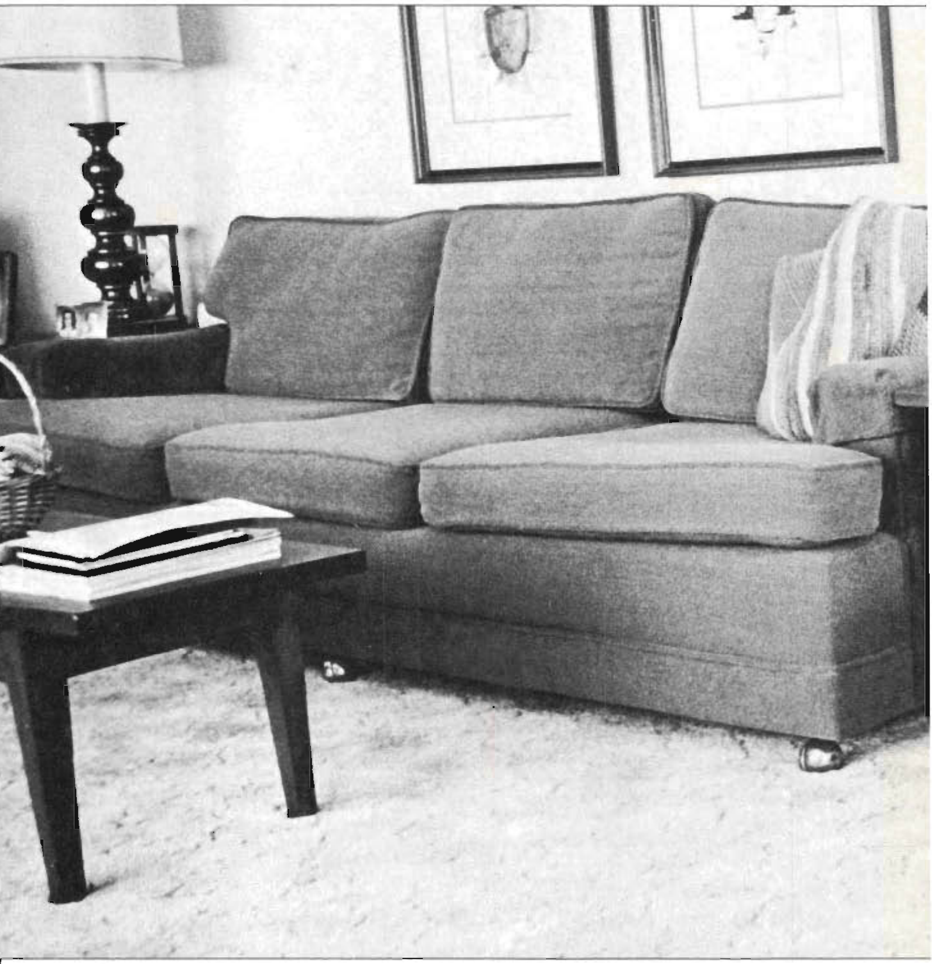
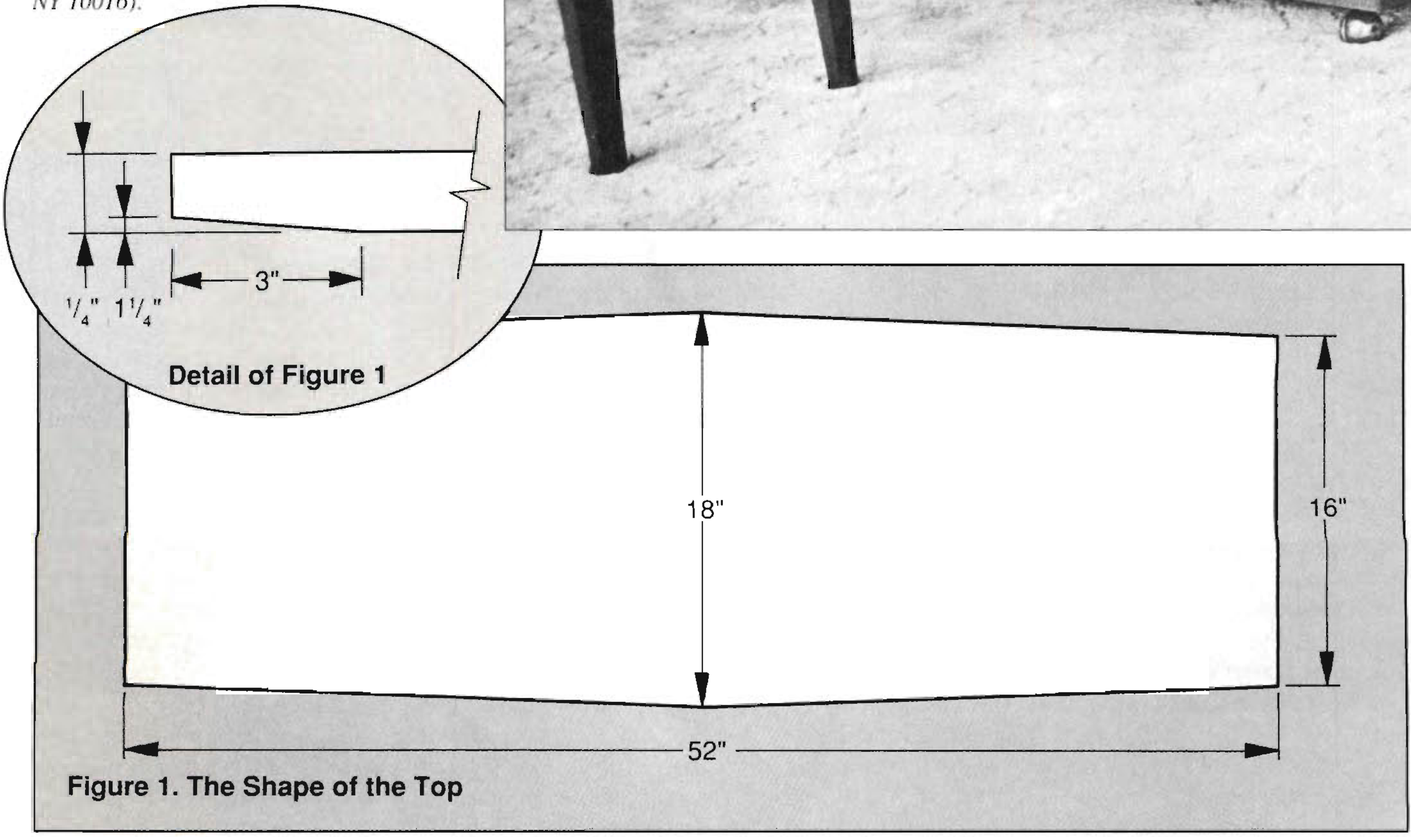
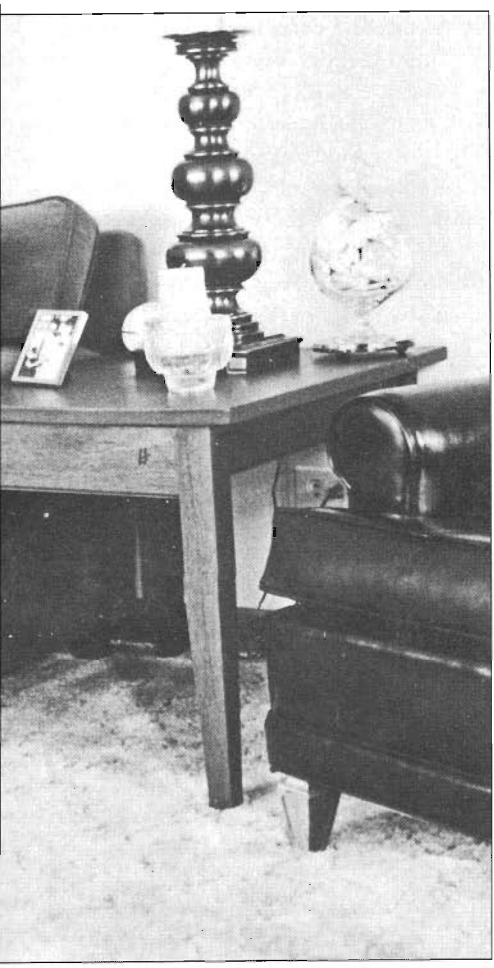
***Hugh Foster** is a part-time furniture designer/builder in Manitowoc, Wisconsin and the author of* The Biscuit Joiner Handbook *(Sterling Publishing Co., 387 Park Avenue South, New York, NY 10016).*





Detail of Figure 1

Figure 1. The Shape of the Top



your particular needs.

When I made the tables shown here, I had just acquired an antique beading plane, which I used to provide some visual interest to the aprons. Individual tastes differ, however, so you may not want to add the beading, or you might even want to add other details of your own.

The Cocktail Table

To make the top for the cocktail table, you'll need a panel that is cut and surfaced to 1-1/4" thick × 20" wide × 52" long. If you start with rough 5/4" stock, the thickness after planing will be slightly less. This is okay, but try to keep material loss to a minimum. If you don't have a planer wide enough to surface the faces (few of us do) have it done by your lumber dealer or a local cabinet shop. The top for the end table is milled to the same basic width and thickness as that of the cocktail table. If you're making the complete set (with one

illustrations by Tom Larson

photos by the author

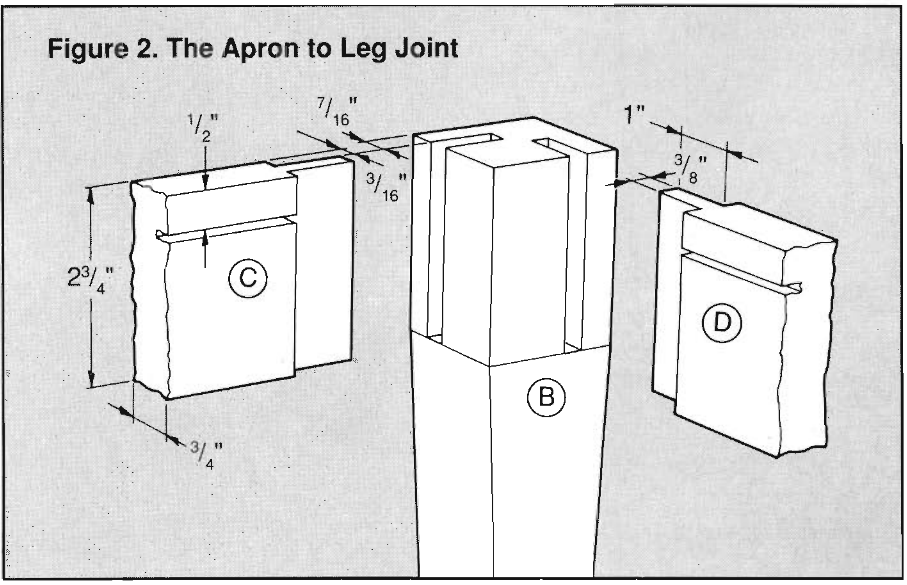
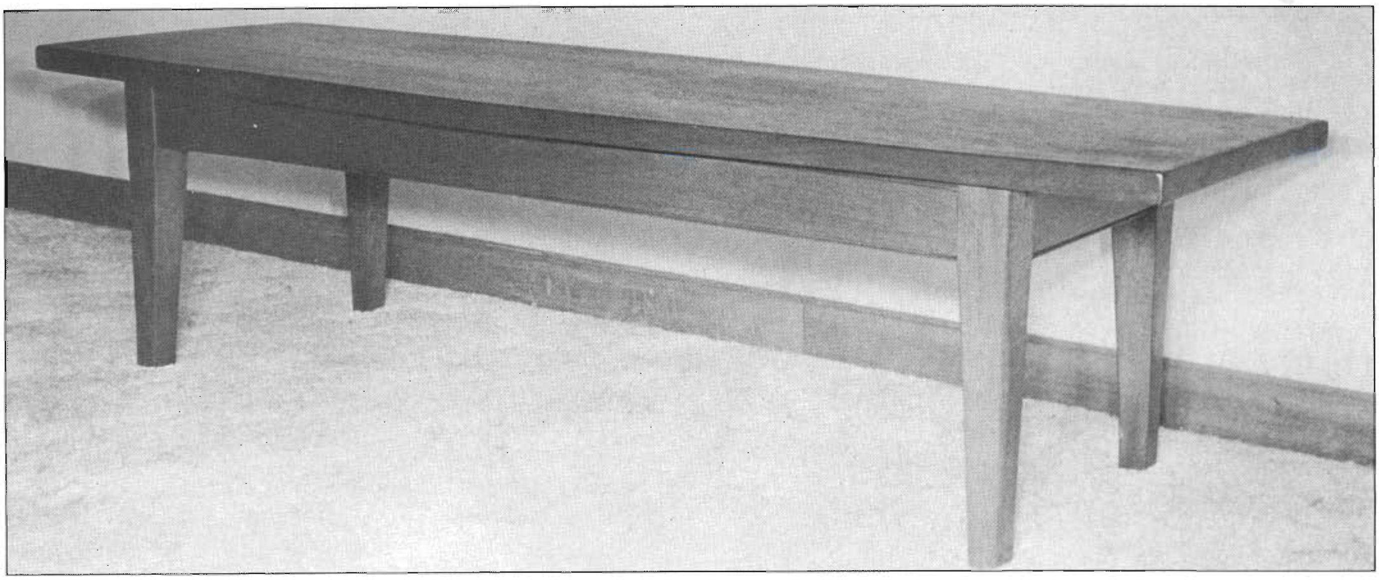


Figure 2. The Apron to Leg Joint



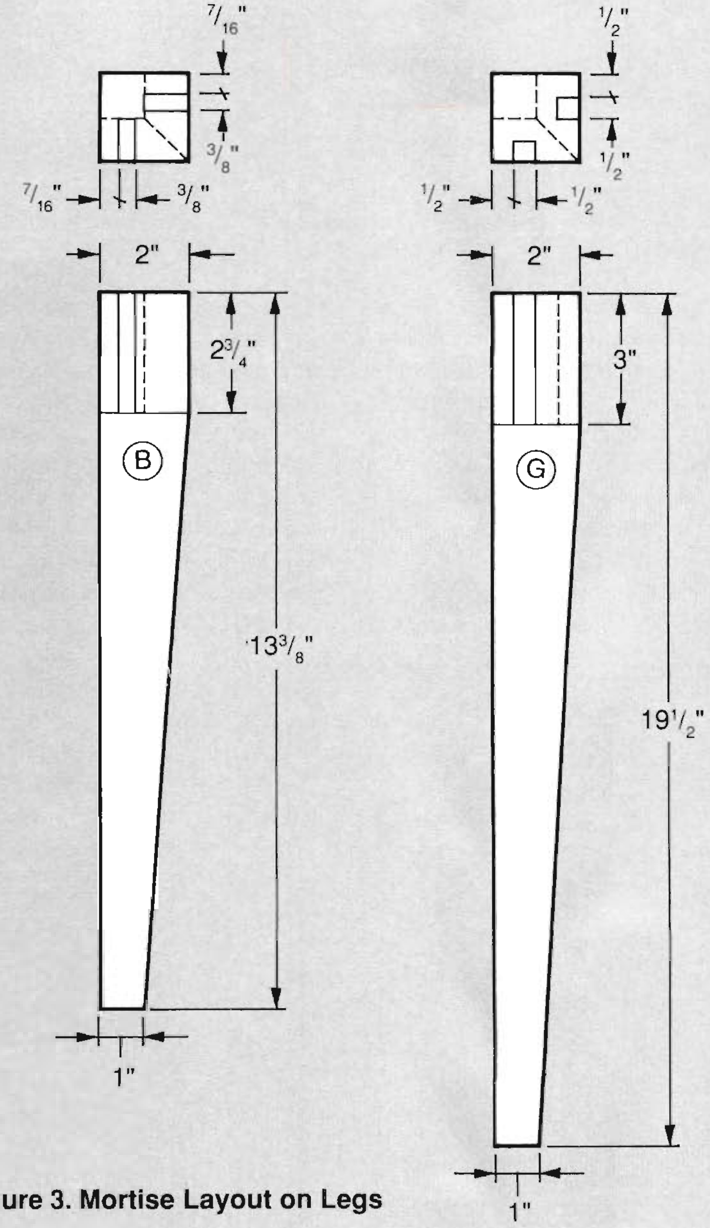


Figure 3. Mortise Layout on Legs

or two end tables), just buy a longer piece of top material and cut all the tops from it. This not only saves time and money, but assures a closer match in wood color and grain pattern.

Once you've milled the top (A) to rough size, taper the sides, as shown in Figure 1. Although the initial width is 20", the finished top will measure 18" wide in the center, tapering down to 16" wide at each end. The extra margin not only facilitates cutting the taper, but also matches the width of the end table tops, if you're making these from the same stock. The best method for cutting the tapers is to use a portable circular saw with a straightedge clamped to the work.

Plane and sand the sides and ends of the top to remove saw marks. Next, de-

Cocktail Table

Cutting List

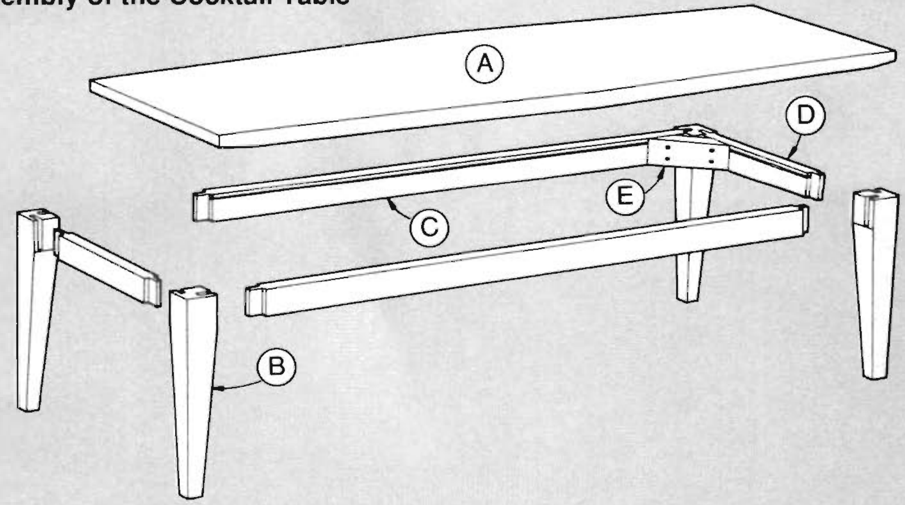
Qty	Part	Finished Size T	W	L	Piece
1	A	1 1/4"	20" *	52"	top
4	B	2"	2"	13 3/8"	legs
2	C	3/4"	2 3/4"	40 1/4"	side aprons
2	D	3/4"	2 3/4"	12 3/4"	end aprons
4	E	1 5/8"	1 5/8"	6"	corner braces

Supplies

8	table clips with screws
16	#10 X 1 1/2" flat head wood screws
4	furniture glides

*Finished width after cutting tapers will be 18". See text.

Figure 4. Assembly of the Cocktail Table



cide which side will be the top surface, then place the tabletop bottomside–up on your bench and bevel both ends, as shown in Figure 1. I used a drawknife and spokeshave to rough–cut the 3" bevels, then smoothed the bevelled surface with a plane and cabinet scraper.

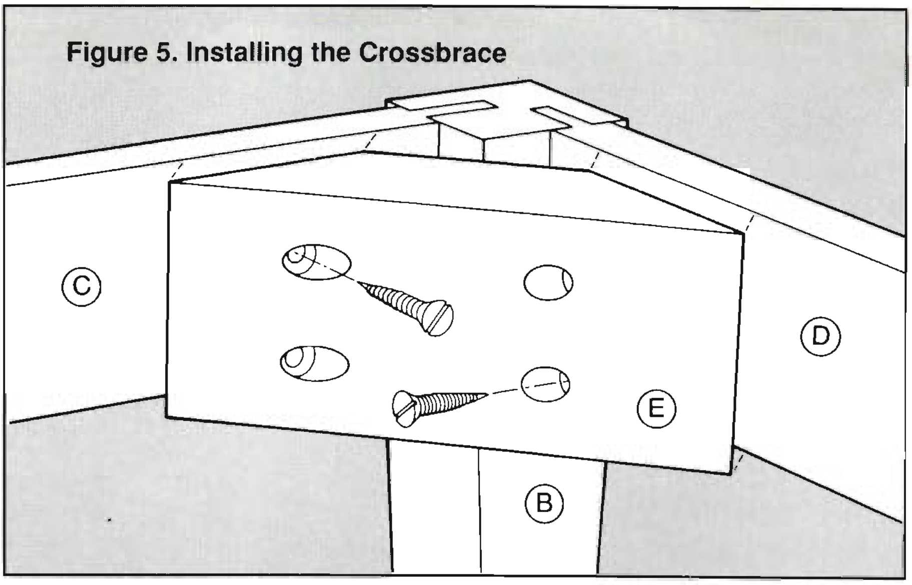
Flip the top back over, and use a cabinet scraper to remove mill marks from the surface. On this project, I found that I didn't need to sand the top; after scraping, I scrubbed it with its own shavings, burnishing the surface until it literally shone. I then applied a coat of medium–walnut Watco Danish Oil, followed by six coats of natural Watco, and finally, a good waxing. I started my finishing schedule for the top before building the base because the top required additional coats to build up a durable finish.

To make the base, cut the legs (B) to size indicated in the cutting list, then mark and cut mortises for the aprons as shown in Figure 2. Next, taper the legs, as shown in Figure 3. You can cut the tapers on a table saw, using a simple taper jig. If you don't have a taper jig, now is a good time to make one (you'll find instructions in the June/July 1986 issue of *Popular Woodworking*). After cutting the tapers, plane and scrape or sand the legs to remove any saw marks or other surface defects.

Now, cut the aprons (C and D) to the sizes indicated in the cutting list. The length includes 1" at both ends to allow for tenons. Mark and cut the tenons, then test them for fit in the mortised legs. Make any needed adjustments for a perfect fit (the top side of the tenoned aprons should be flush with the top of the legs), then scrape or sand the aprons smooth. Now is also the time to add any decorative features to the aprons, such as the beading I put on mine. You should also cut a kerf at 1/2" from the top edges of the aprons for the tabletop fasteners (see the list of supplies).

Glue and clamp the base assembly together (see Figure 4). A framing clamp facilitates this nicely. Before you attach the top, clean up any glue squeeze–out on the base, sand or scrape it smooth, and burnish with wood shavings. Cut and install the four corner braces (E) to the base, as shown in Figure 5. Then, carefully position the base on the underside of the top, and attach it with tabletop fasteners and screws, two on each end and two on each side.

Figure 5. Installing the Crossbrace



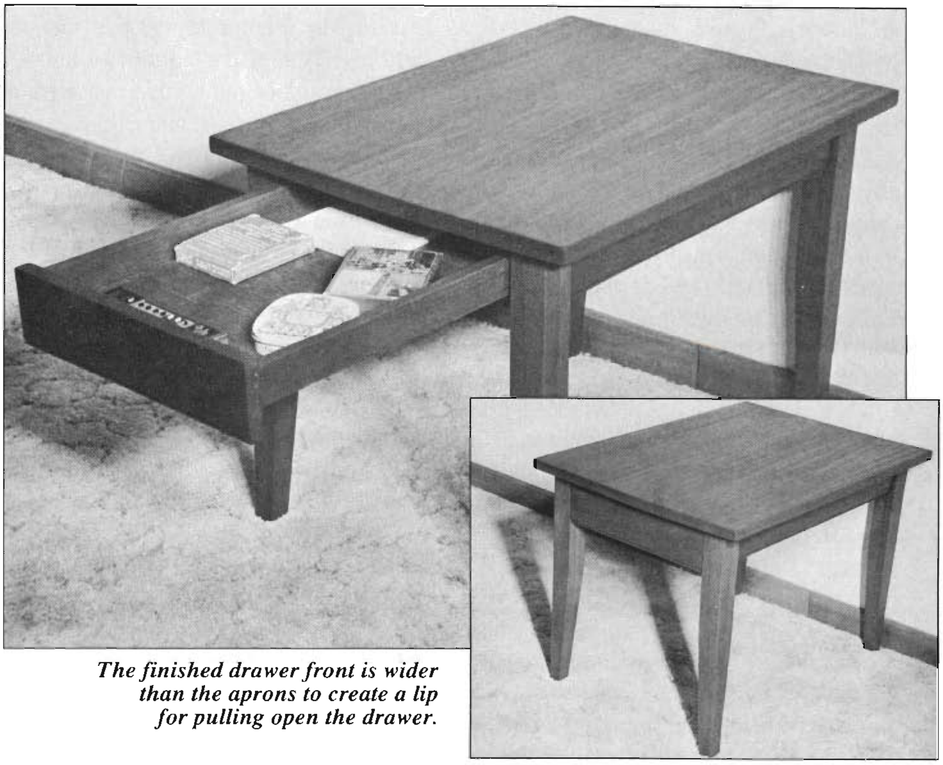
illustrations by Tom Larson

Disassemble the table and apply a coat of medium walnut Watco oil to the base. Reassemble and apply two or three coats of natural Watco to the entire table. Note that the initial coat of medium walnut oil you applied to the top and base simulates the deep, rich appearance of mahogany darkened with age, which it will do naturally after a period of time, anyway. After the final oil coat is dry, apply a good paste wax, and your table is ready to grace the living room.

Matching End Tables

To make the end tables, you'll be using most of the same procedures described for the cocktail table—mortise and tenon joinery, tapering the legs, applying an oil finish, and so–forth. One major difference is the addition of a drawer and the elimination of the corner blocks to allow clearance for the drawer. The height of these tables is 20-1/2", but I strongly suggest that you adjust it (lengthen or shorten the legs) to accommodate the height of the arm rests on your sofa or easy chair.

Cut the top (F) to size, smooth to remove mill marks, and break any sharp edges with sandpaper. As with the cock-



photos by the author

The finished drawer front is wider than the aprons to create a lip for pulling open the drawer.

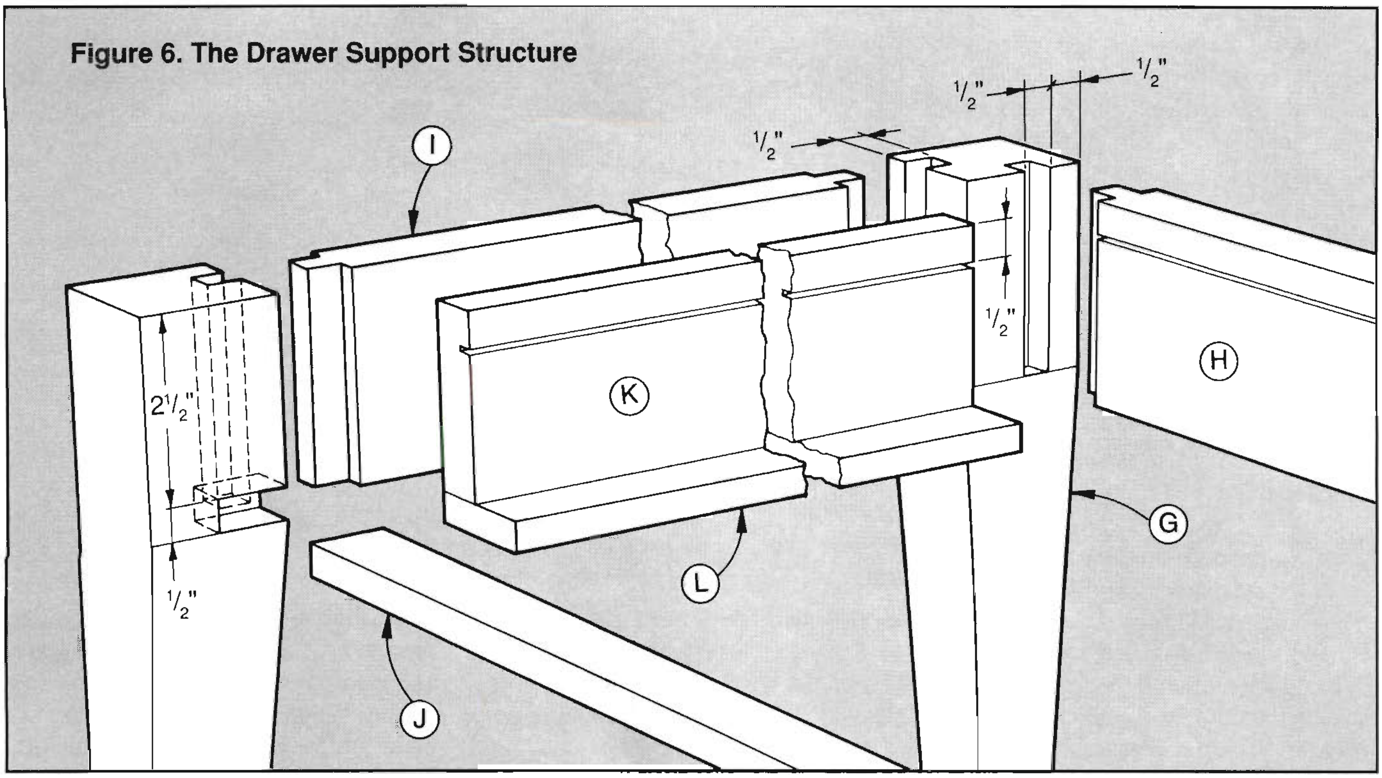


Figure 6. The Drawer Support Structure

tail table, start your finishing schedule before building the base. Cut the legs (G) to size, then cut 1/2" × 1/2" × 3" long mortises in the legs to accept the back apron (H) and side aprons (I) as shown in Figure 6. Next, cut a 1/2" wide × 1" long stop–dado, 1/2" deep to accept the front drawer support (J). The bottom surface of the dado should be exactly 3" below the top of the leg. Mark and cut the leg tapers as shown in Figure 3 using your tapering jig on the table saw. Cut the tenons on the ends of the aprons (Figure 6), and bead the edges.

Test–fit the base assembly and make any needed adjustments, then glue and clamp the base together (see Figure 7). After the glue has dried, clean off any squeeze–out and sand or scrape smooth. Flip the base upside–down on your bench and measure the distance between the front and back legs at the side aprons. Cut filler strips (K) to fit between the legs, and plane them to a thickness that makes them flush with the legs' inside corners. The bottom edges of these strips should line up with the top edge of the front drawer support (J) so that the side drawer supports (L) will be flush. Cut the grooves for the table irons in these filler strips; the drawer sides will ride low enough to clear the table irons. Glue the strips to the side aprons, flush with the apron top. After the glue has dried, carefully position the top on the base and attach it.

Now, measure and cut the drawer supports (L), and attach them to the bottom edge of the filler strips with glue and finish nails. Make sure the tops of the supports are perfectly flush with that of the front support (J), so the drawer will rest squarely on all three.

Next, cut the drawer sides (M) and ends (N) to size and cut the 1/4" × 1/4" grooves in them to accept the plywood bottom (O). Cut the bottom to allow a slight amount of movement in the frame (do not glue it in place, or the drawer may warp or stick). You can either assemble the drawer frame with simple butt joints, using glue and finish nails, or, if you have a router and dovetail jig, with half–blind dovetails. If you do the latter, adjust the lengths of the pieces to compensate for the dovetails. Cut the finished front (P) to size and apply it to the drawer so it clears the underside of the tabletop by about 1/8". The overhang at the bottom will enable you to open the drawer without knobs or pulls.

Apply finish to the end table and drawer face, following the same procedures as for the cocktail table. As a final touch, you can add furniture feet to the bottom of the legs (see the list of supplies). If you've made two end tables, you now have a handsome set to arrange around your favorite couch. PW

End Table

Cutting List (for one)

Qty	Part	Finished Size			Piece
		T	W	L	
1	F	1 1/4"	20"	28"	top
4	G	2"	2"	19 1/2"	legs
1	H	1"	3"	14 1/2"	back apron
2	I	1"	3"	24"	side aprons
1	J	1/2"	1"	14 1/2"	front drawer support
2	K	3/4"	2 1/2"	23"	filler strips
2	L	1/2"	1 3/4"	23"	side drawer supports
2	M	1/2"	2 1/4"	20"	drawer sides
2	N	1/2"	2 1/4"	12 3/8"	drawer ends
1	O	1/4"	12 3/4"	19 3/8"	drawer bottom
1	P	1"	3 1/2"	13 3/8"	finished drawer front

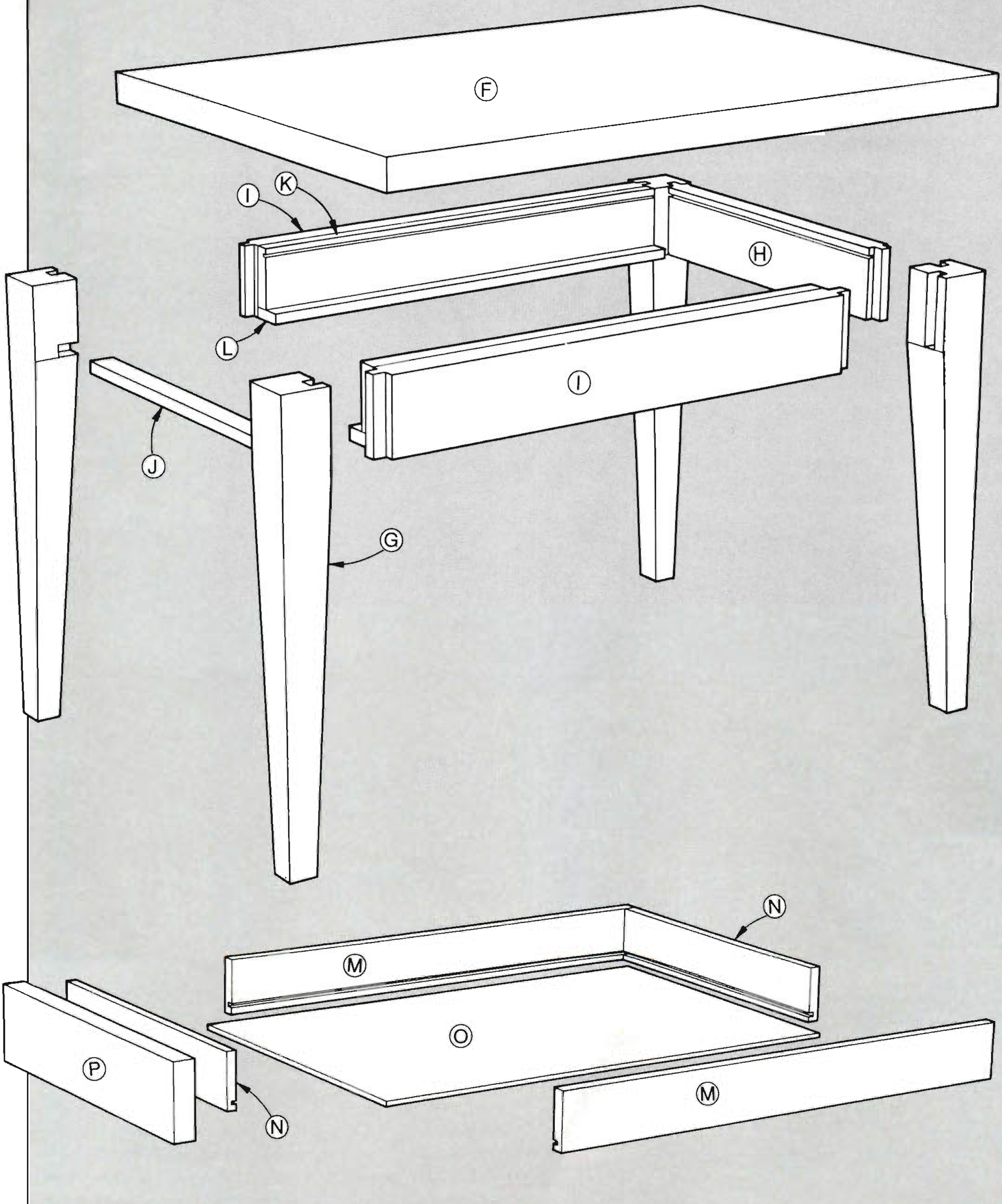
Supplies

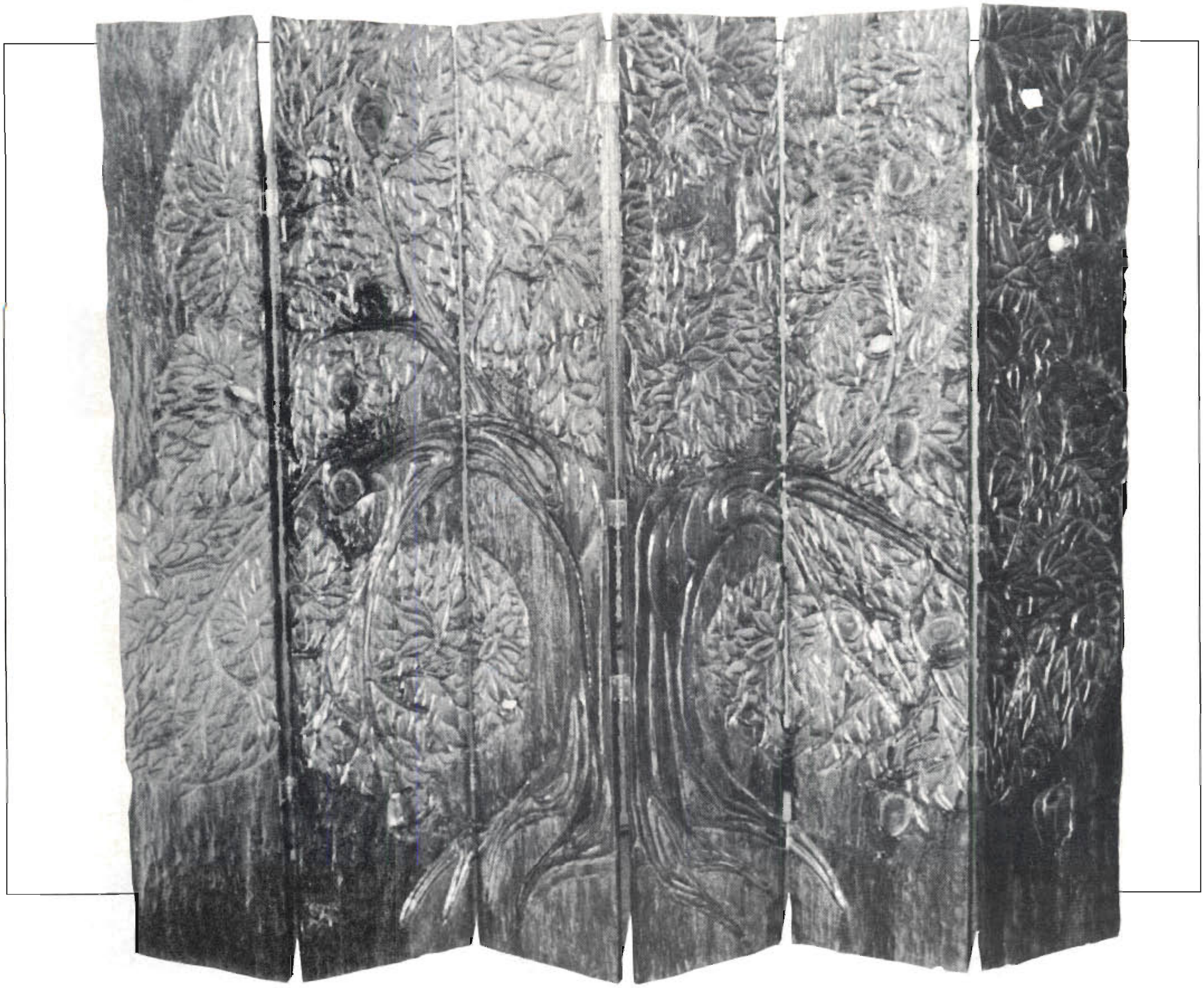
8	table clips with screws
4	furniture glides

Sources

Table Clips #D9500 and
Furniture Glides #C1724 from:
The Woodworkers' Store
21801 Industrial Blvd., Dept. PW
Rogers, MN 55374-9514

Figure 7. Assembly of the End Table





Decorative Carved Screen

by Amy D. Shojai

This folding wood screen is comprised of six individually carved and hinged panels that portray, on one side, a stylized fruit tree and on the other, a peacock in full display. Agate stones have been mounted in the screen for "eyes" of the peacock feathers on one side, while shining through as "fruit" of the tree on the other.

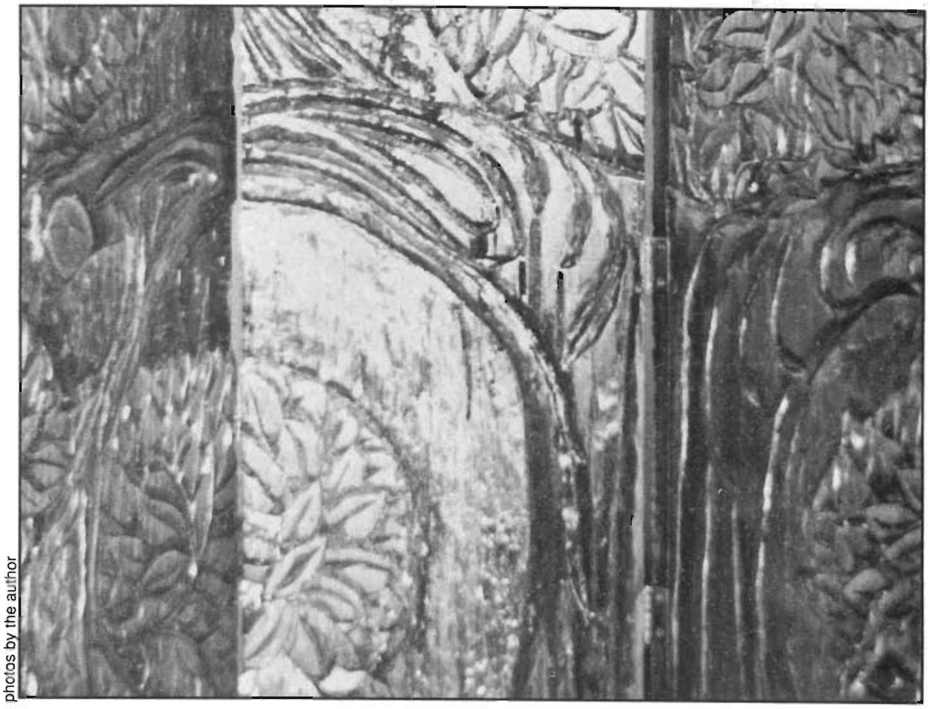
Amy D. Shojai is a woodcarver and writer living in Sherman, Texas.

I made my screen out of one by twelve knotty pine shelving planks with dimensions of 3/4" × 11-1/4" × 54". The knots are incorporated in the design, acting along with the agate stones as the many eyes of the bird feathers on one side and the tree's fruit, knots, and burls on the other. If you choose such wood, draw your design to give you as little carving of the knots as possible since the wood in these places is of unpredictable grain and density.

The design may be as simple or intricate as your imagination desires. The patterns in Figures 1 and 5 are provided just to get your creative juices flowing; you'll have to customize them to accommodate the knots in your wood. Align the planks on a large work space, and, with an eye to the size and position of the knots, pencil in the design. Remember that when carved each individual plank must fully align with the next. The pencil lines will be carved away so, at this stage, keep the design simple. Detail should be added later.

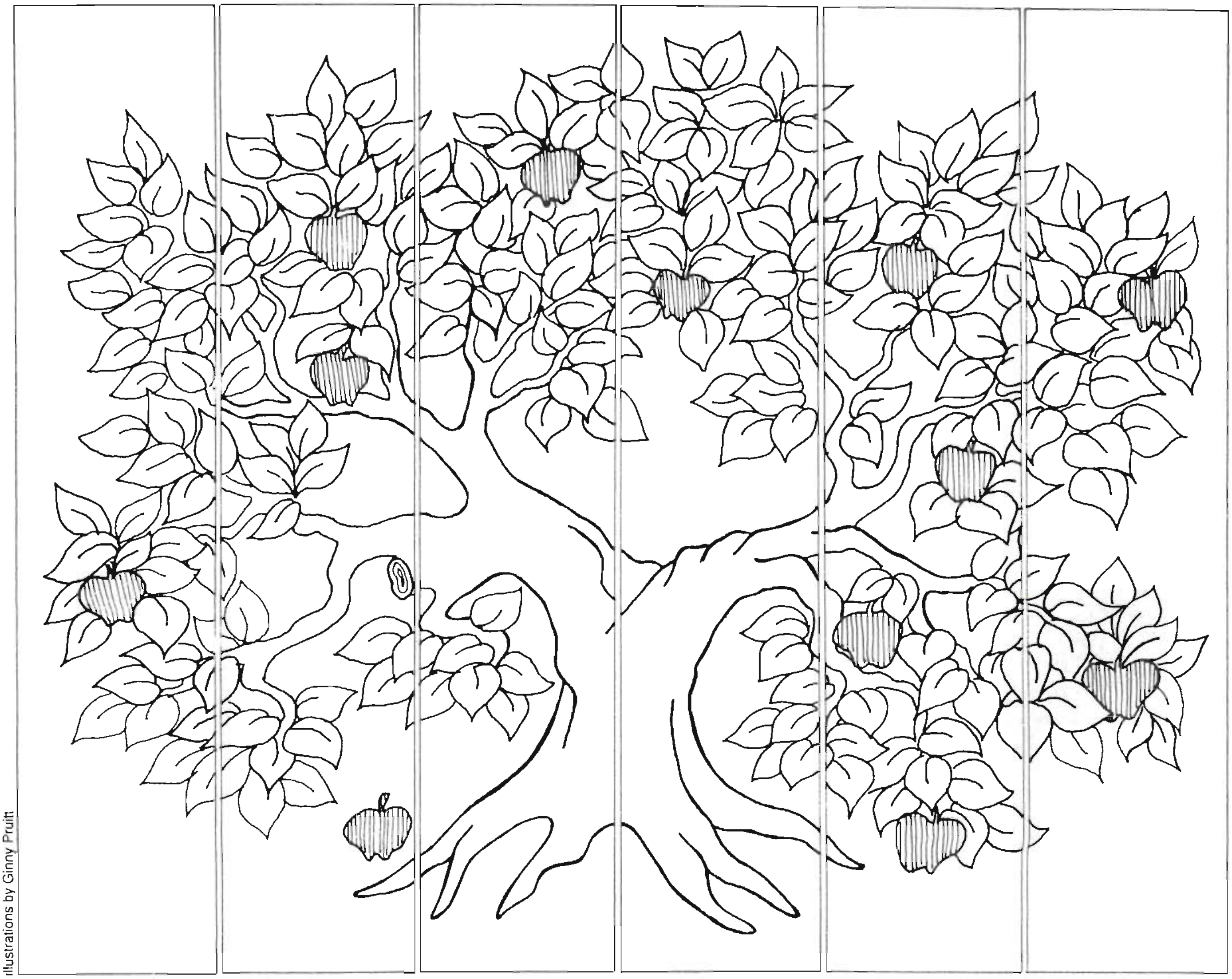
The first stage is roughing out the design by cutting an outline and then removing the "background." For useful information on this and every stage, read William H. McMaster's "Relief Carving: An Introduction" (*Popular Woodworking* #39, October/November 1987). I used a very basic collection of carving tools including a straight blade knife, a chisel, shallow and deep gouges, and a V–tool. Use the straight blade to outline the entire design. Cut at an angle, leaning the handle of the knife *toward* the design. Then cut a second outline, parallel to the first with the blade handle tilted *away* from the design. This procedure should result in a thin, wedge–shaped groove completely outlining the pattern.

Now, keeping in mind that the deeper the background, the more contrast the



photos by the author

Figure 1. Make the knots in your material the fruit in the design.



Illustrations by Ginny Pruitt

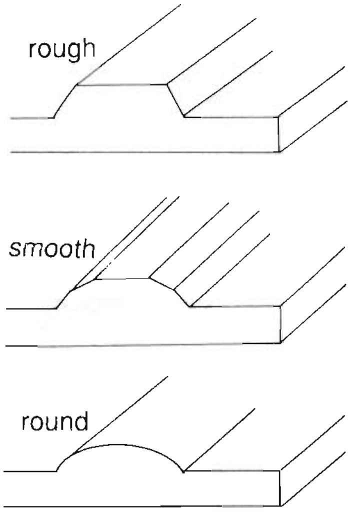


Figure 2. The three stages of shaping a surface.

Illustrations by Ginny Pruitt

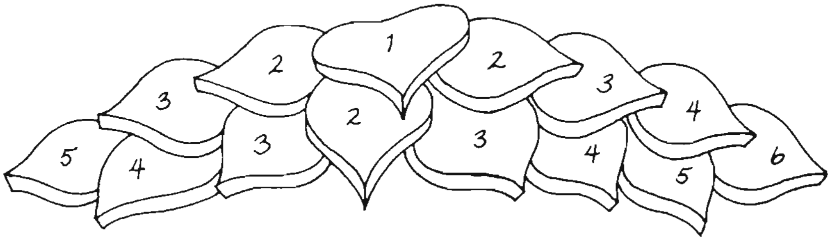
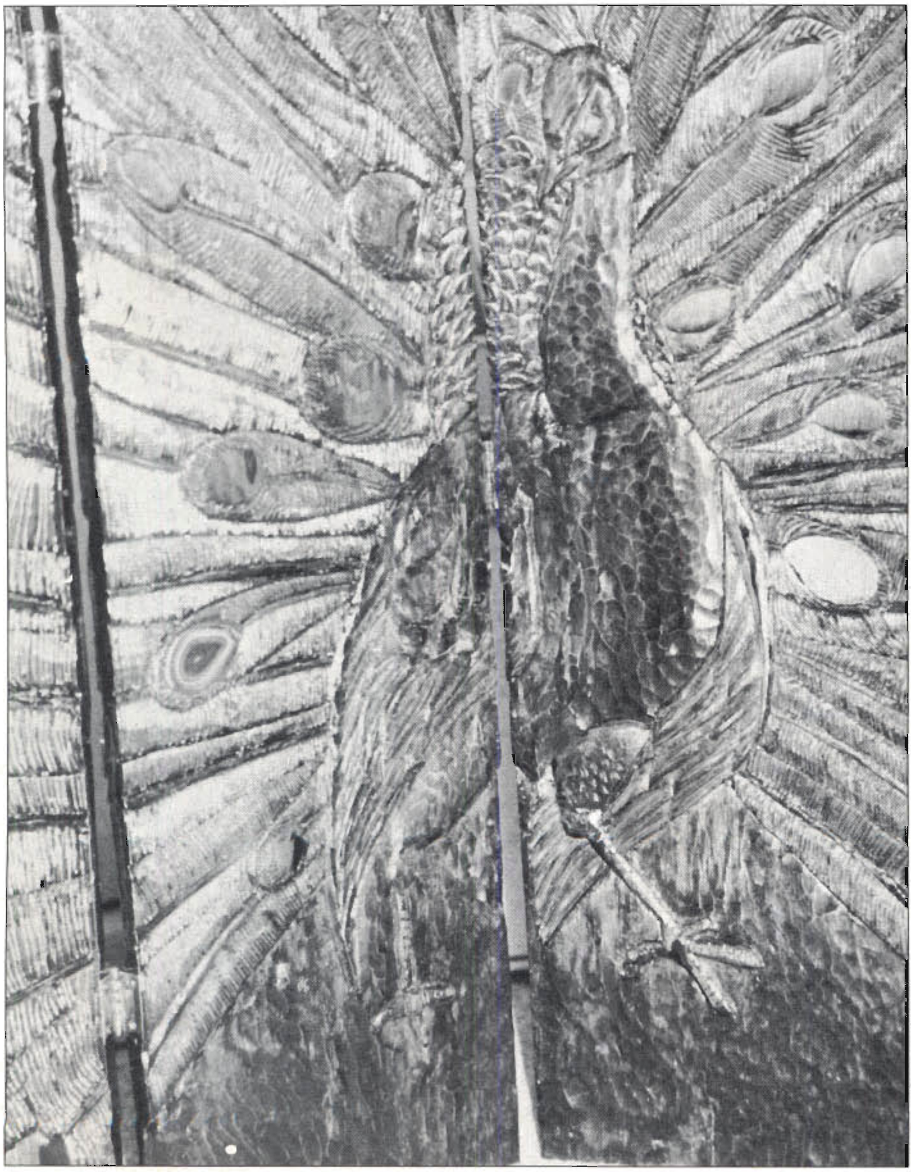


Figure 3.
Carve clusters of leaves as receding layers.


photos by the author

carving will show, decide what portions of the design will stand out the furthest. This section should be attacked first, or later the carving may need to proceed nearly through the wood in order to gain the right contrast. You want to "boast" the high areas by roughing down the low areas.

I carved the trunk and branches of the tree first, incorporating the existing grain and idiosyncrasies of the plank right into the design. Knots in the plank became knots and fruit of the tree; grain in the plank was exaggerated and stylized, becoming gnarled limbs and branches. After using the straight blade to outline any portions of the trunk not roughed out previously, round and smooth the overall tree shape (see Figure 2). Then add individual burls and details—again, by roughing first and then rounding and smoothing. Use this same roughing, rounding and smoothing routine throughout the project.

Carving the leaves of the tree is very simple and repetitive, yet when finished they look extremely impressive. At first they are nothing more than roughed out circular areas where individual leaves will later be formed. Each circle is rounded and smoothed to a convex mound whose edges seem to "disappear" into the plank. Leaves are then penciled in, starting always at the highest point of the mound and underlapping as you proceed out to the edges of the circle (see Figure 3).

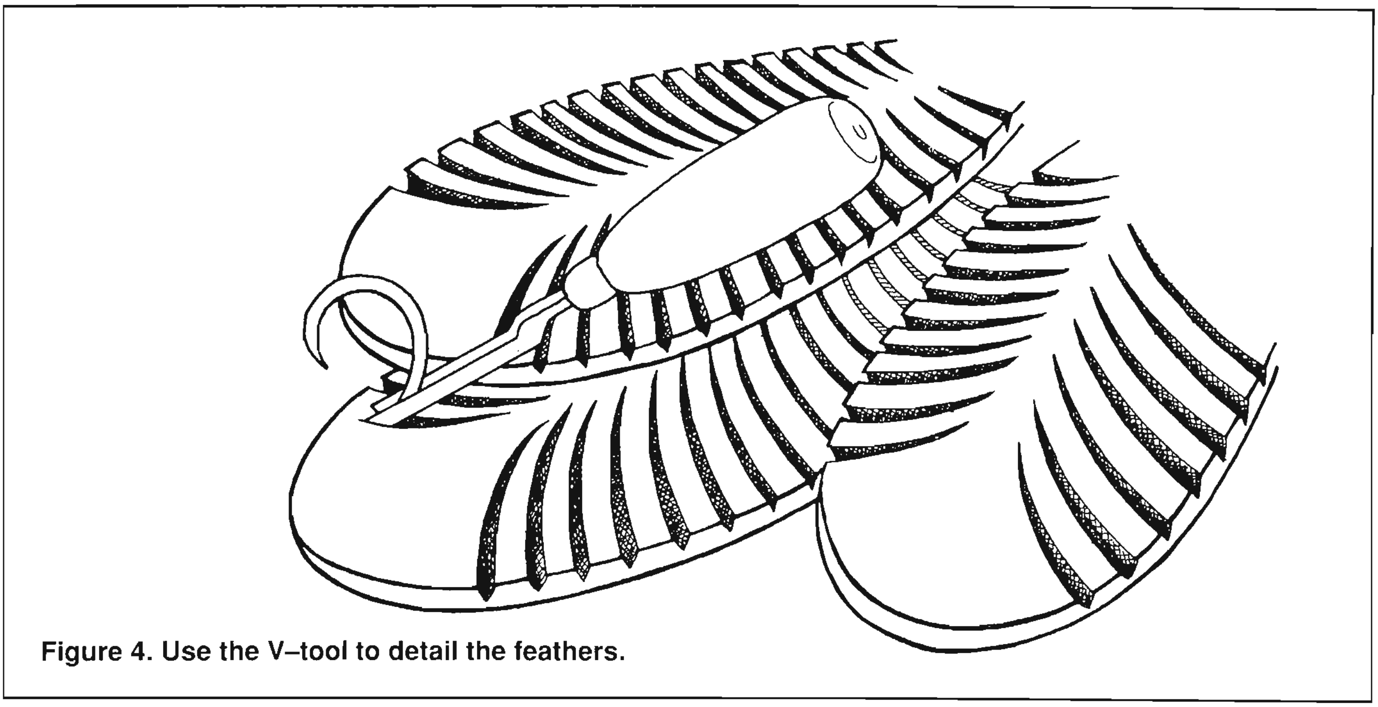
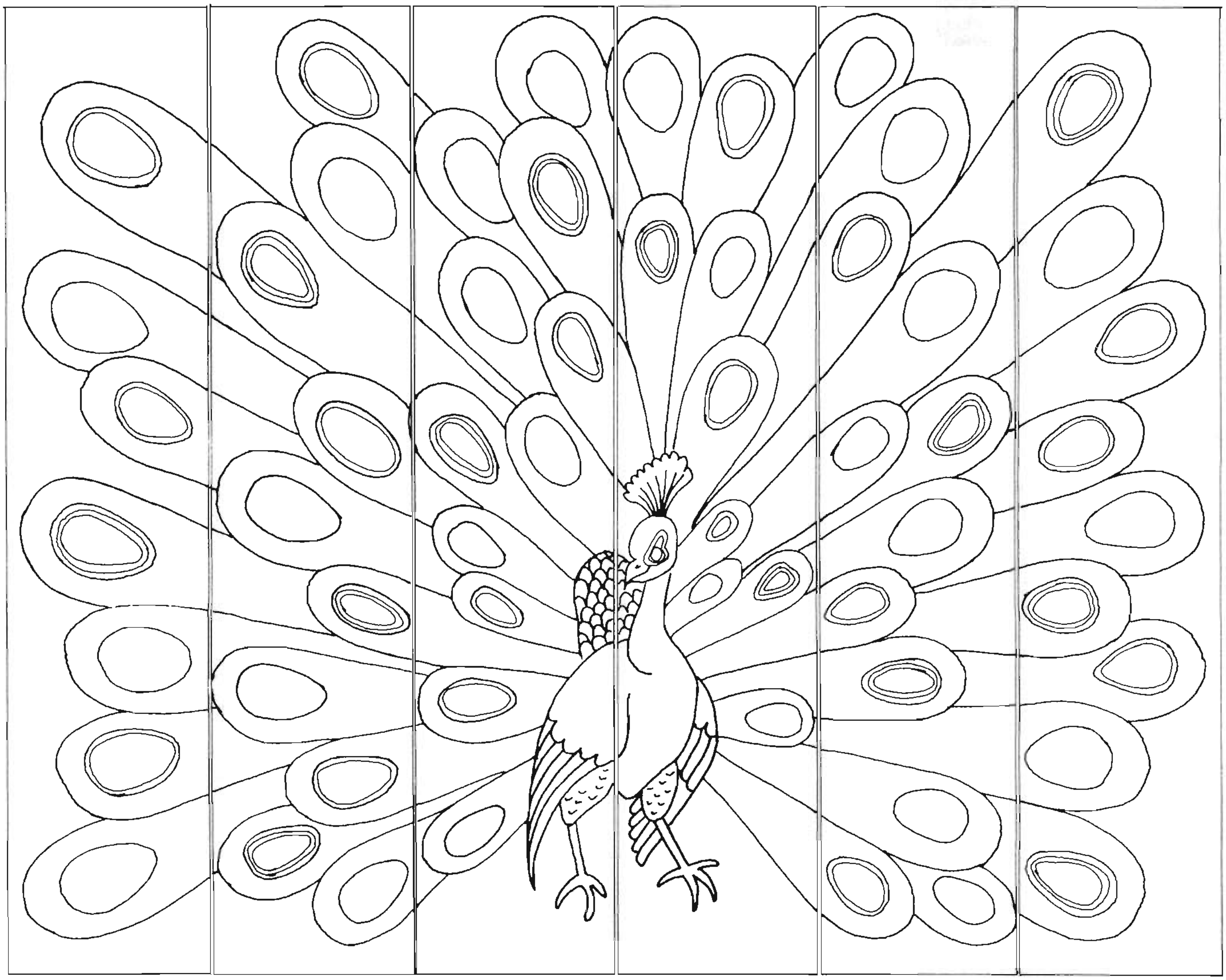
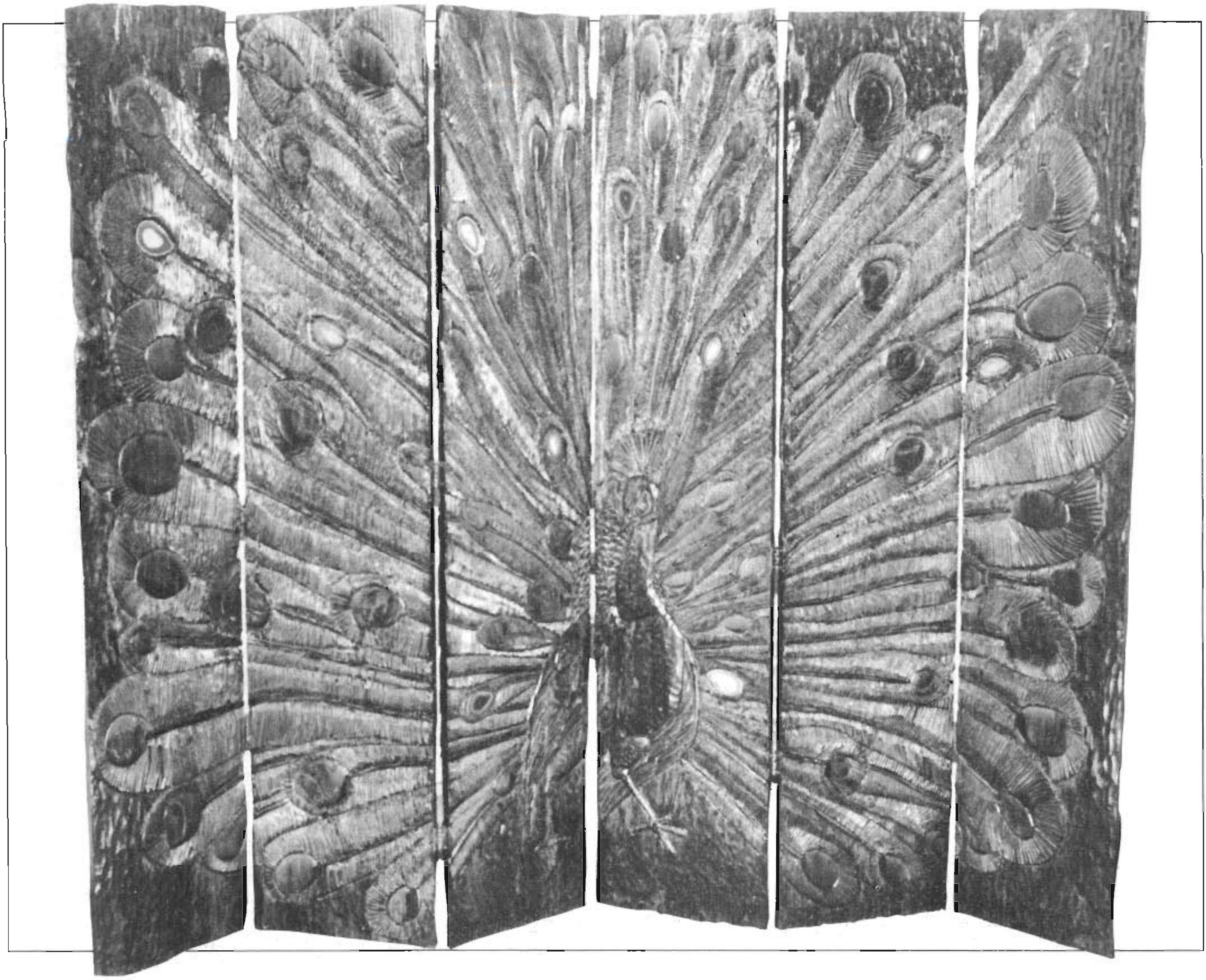


Figure 4. Use the V–tool to detail the feathers.

Figure 5. The knots and the agates are the "eyes" in the feathers.





photos by the author

Using the straight blade, cut a protective outlining groove (a stop–cut) around the top–most leaf. Round and smooth the next underlying leaves so that the highest leaf appears to stand out from the mound. Continue with the immediately underlying leaves, deciding which is topmost and cutting protective grooves around it. Each time the groove is carved, the next underlying leaf is rounded and smoothed—only then is its own stop–cut carved. Once all the circles of leaves are completed, each individual leaf may be scored down the middle with the V–tool to create a vein or stem, giving further detail and texture to the finished carving.

Carve the peacock by following the same procedure. Cut a protective groove that outlines the bird first. Rough out the background and smooth it; then determine the topmost portion—the peacock's head and neck—and carve and round it appropriately. I achieved an interesting "feather" texture here by using the shallow gouge very carefully.

The sweeping tail feathers are layered much the same as the leaves (see Figure 4). Pencil simple oblong shapes onto the wood, crossing to adjacent planks to enhance the illusion while being careful to keep the planks and drawings lined up and true. Once the oblongs are roughed in with the straight blade and rounded smooth, carve a center quill in each. Accomplish this by cutting along each side of the quill with the V–tool when working *with* the grain, or by cutting two parallel outlines with the straight blade when working *against* the grain.

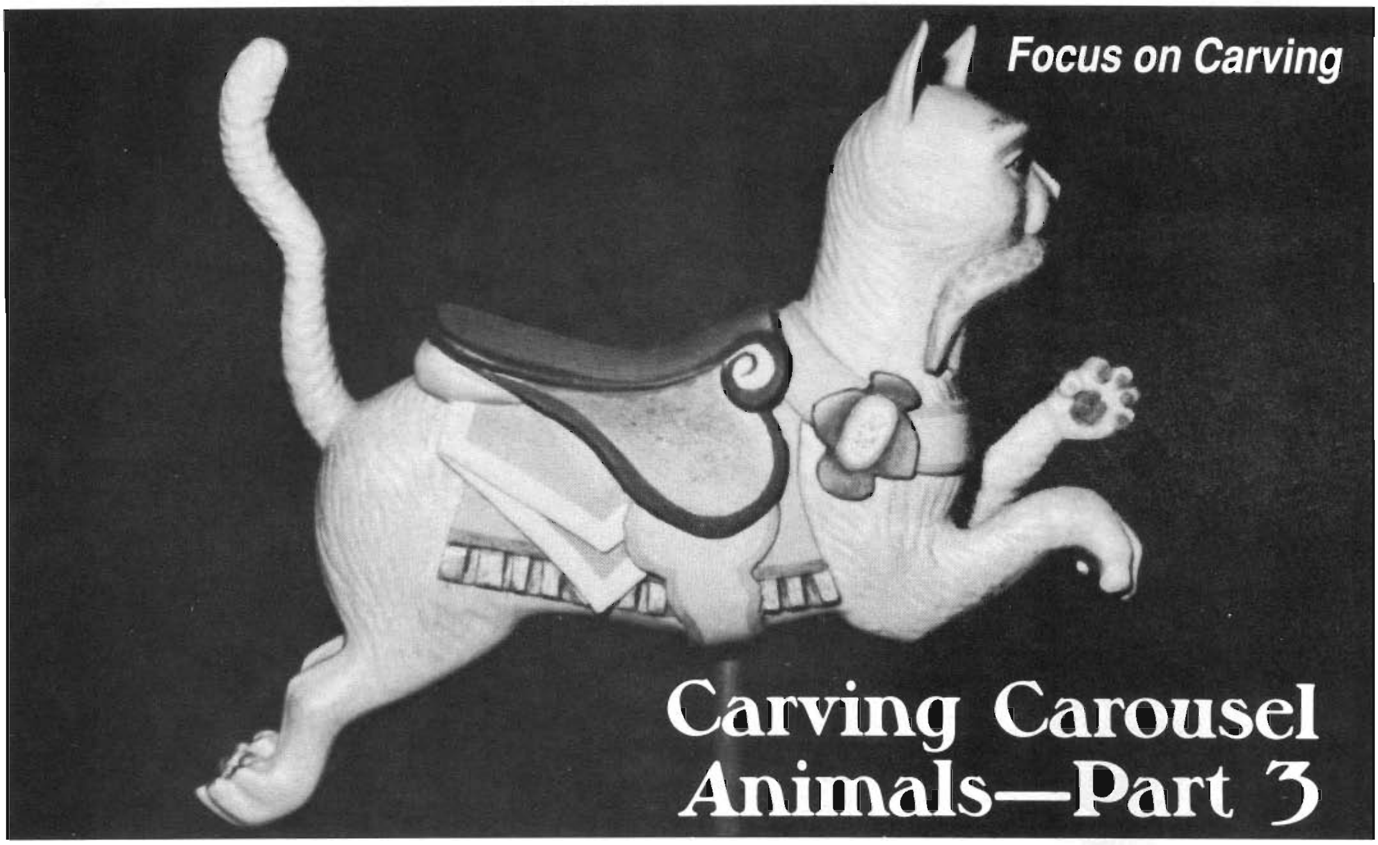
Carefully smooth the line of the quill and round the body of the feather down to meet it before carving the many meticulous parallel grooves with the V–tool. The eyes of the peacock feathers should be left alone, whether or not they coincide with knots.

For accent, carve insets through the planks to hold agates, which then serve as peacock feather eyes while showing through on the other side as stylized apples. Stained glass can also be used, or the wood itself will do just fine.

The completed panels hinge in an accordion fashion so that the screen may be folded for easy movement. Depending on the design, the six panels could also be hinged in two three–panel sections. I stained the knotty pine to a cherry finish, wiping off the first coat with a clean, lint–free cloth, allowing the deeply carved recesses to retain more of the stain. This creates an effective contrast and adds to the appearance of depth in the carving. Finish the wood before installing the agates. I anchored them in their pre–carved insets with ceramic tile cement.

Since its size, composition and finish can be determined in advance to complement existing interior design, the decorative carved screen can make an attractive and dramatic wooden accessory for virtually any room. PW

Focus on Carving



Carving Carousel Animals—Part 3

by William H. McMaster

In this article we will round out your collection of carousel animals by giving you a few patterns for menagerie animals. With the increasing popularity of the carousel, the figures eventually began to include animals other than the horse. Although the horse was by far the most popular, most manufacturers (except Stein and Goldstein) offered menagerie animals. Some of them carved a large selection of animals, while others only offered the lion and tiger—the favorites with the riding public. The carvers often used historical sculpture for their models. Mueller used the processional lions on the Lion Wall of the 6th Century BC Babylonian palace of Darius I. The lions carved by Looff are similar to the six lions carrying support pillars for the ornate pulpit of the 13th Century Cathedral at Ravello, Italy. Many Dentzel lions are comparable to the traditional standing lion used in heraldic pageantry and common on many coats of arms.

The lion was traditionally placed on the outside row with his natural prey (ostrich, deer, giraffe, zebra) mounted on the inner rows just ahead of him to simulate his stalking of the weaker animals as the carousel revolved. The tigers were generally placed on the opposite side of the carousel from the lion to indicate that these two predators do not share the same

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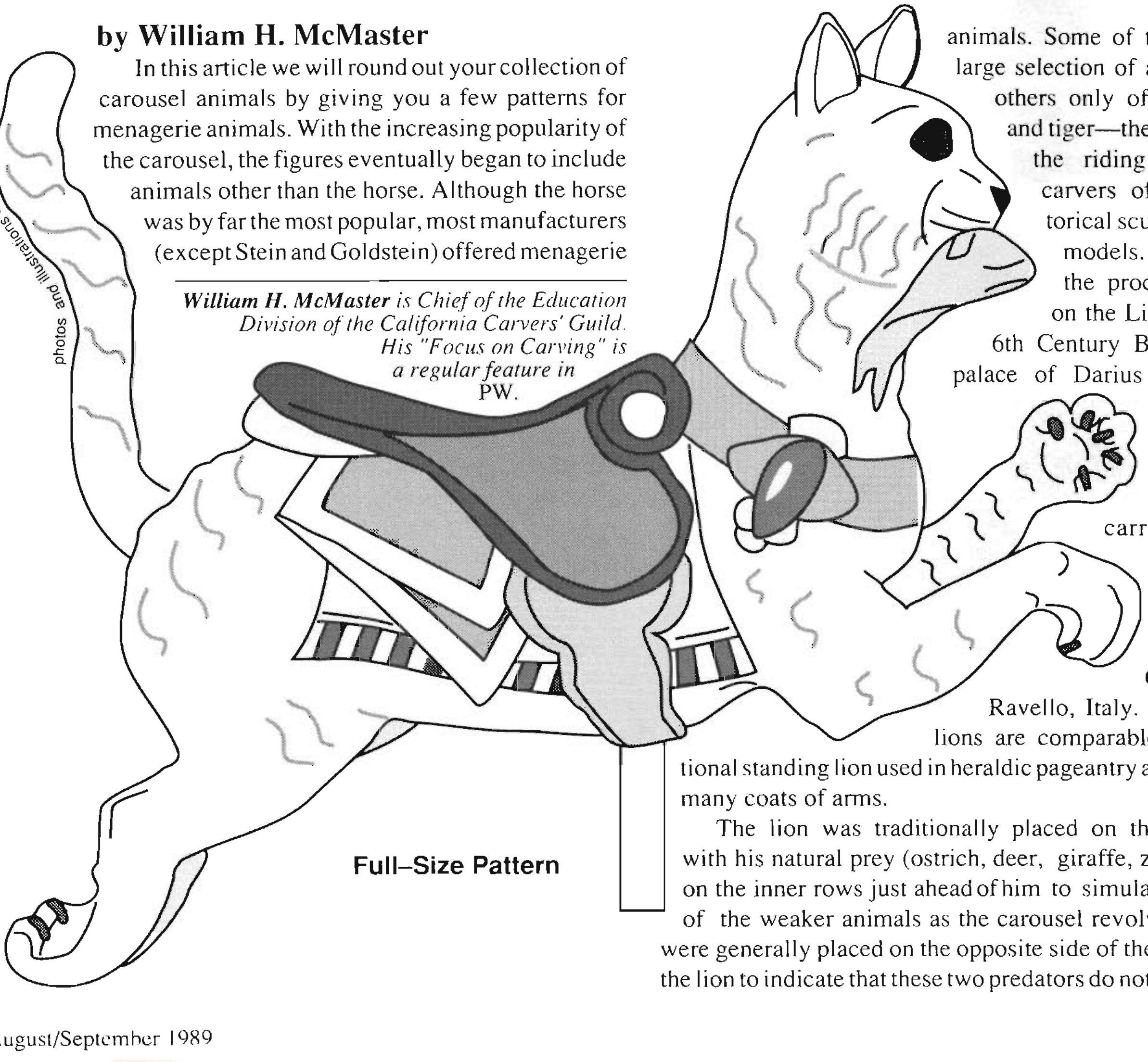
***William H. McMaster** is Chief of the Education Division of the California Carvers' Guild. His "Focus on Carving" is a regular feature in* PW.



photos and illustrations by the author

Full-Size Pattern

habitat.

Menagerie animals first appeared on European carousels during the late 18th century and became popular in America after their introduction by Charles Looff in 1876. When Charles I.D. Looff arrived from Denmark in 1870 at age 18, he was challenged by immigration officials to give a middle name as a positive "ID." Not having one, he resourcefully told them that his middle initials were "I.D." Once in America he began working as a woodcarver in a furniture factory and carved carousel animals at home in his spare time. He was very successful and soon began carving carousel animals full time. In 1910 he moved his factory to Ocean Park, CA, and later to Long Beach. His carousel in Long Beach was recently restored and is now operating for the enjoyment of all.

The most popular menagerie animals were carved by Dentzel, and his carvers achieved a great deal of realism while producing their fantasy figures. However, when the Mueller brothers left the company in 1907, Dentzel stopped producing menagerie animals.

Here we present two patterns fronm Dentzel: the cat and the giraffeand also the camel produced by the Philadelphia Toboggan Company. For reference photos of the original carved animals, you can use the following three books: The *Art of the Carousel,* by Charlotte Dinger, shows a picture of the head of the cat and its paws on page 61, the giraffe on page 64, and the camel on page 144. The second book is *The Encyclopedia of Collectibles (Buttons to Chess Sets)* by Time–Life Books. In this book the cat is on page 43, and the giraffe on page 69. A good reference for the camel is again shown on page 80 of *Painted Ponies* by William Manns and Peggy Shank. These references will help you with both the carving and the painting of these figures. It's good to learn to use photographs as references while you carve. For continuing information on carousels and carousel animals, you might want to subscribe to the quarterly magazine, *Carousel Art* (P.O. Box 992, Garden Grove, CA 92642).

Before you start carving, it is especially helpful to first make a clay model of the head, so you have a very good idea of how it is formed. The main charm of these fantasy animals is in the faces, so that is where you should spend most of your effort.

I placed the holding tabs for the camel and giraffe on the bottom of the two hind feet as shown in Figure 1. When working on the animals, leave the carving of the hind legs until the end. You don't want to break these hind legs. When the tab is removed, you can hold the animal in a vise between two pieces of hard sponge to protect the carving you have already done.

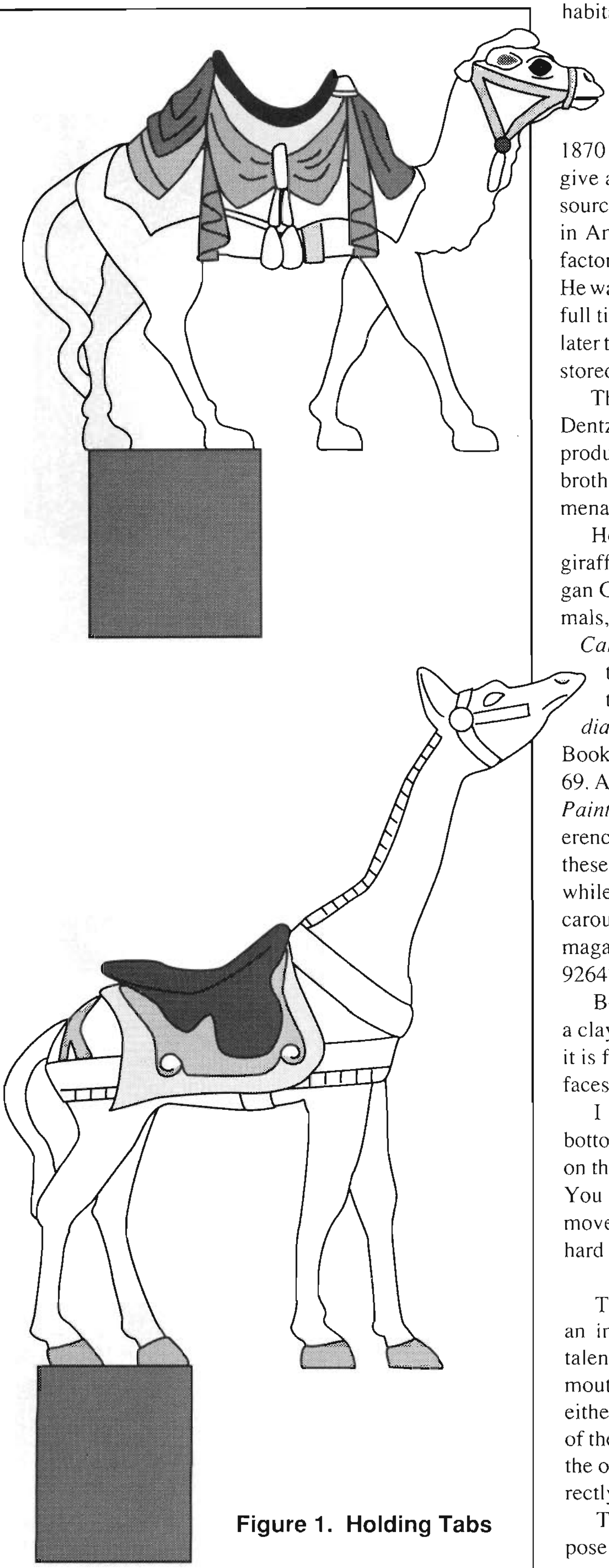
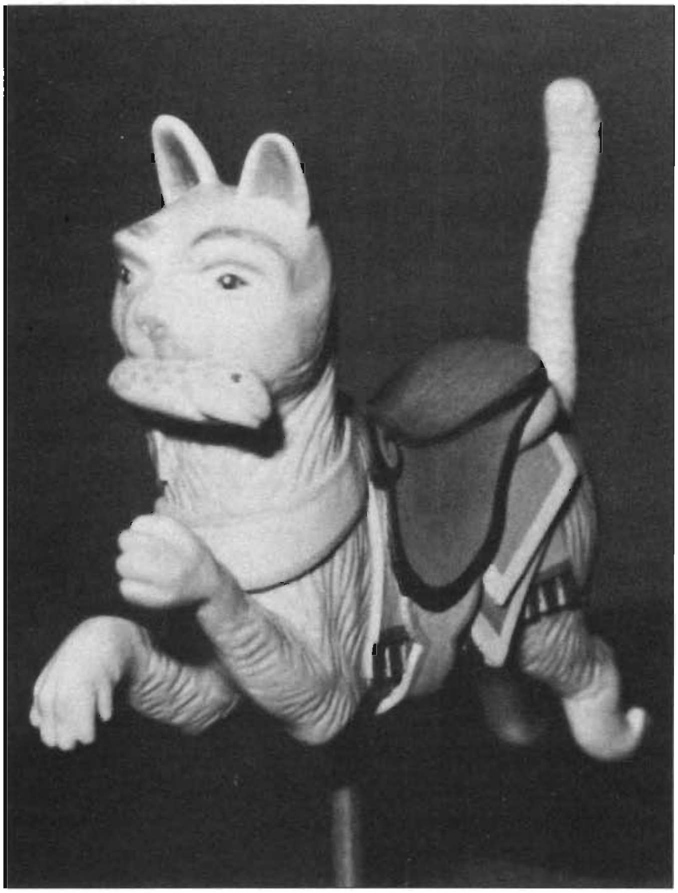


Figure 1. Holding Tabs

Dentzel Cat

The first carousel cat was created by Salvatore Cernigliaro, an immigrant from Sicily, who was one of Dentzel's most talented carvers. Every Dentzel cat had some small animal in its mouth representing its newly caught prey. This prey was usually either a bird or a fish, and in our pattern we use the fish. The head of the caught animal was always facing the left side, away from the outside of the carousel, to spare the onlooker of looking directly at the dead animal.

The cat in this pattern has a realistic body carved in a running pose. Use the photographs referred to above and those that accompany this article to guide your carving. Figure 2 gives engineering–style views of the cat's head to help you with this



photos and illustrations by the author

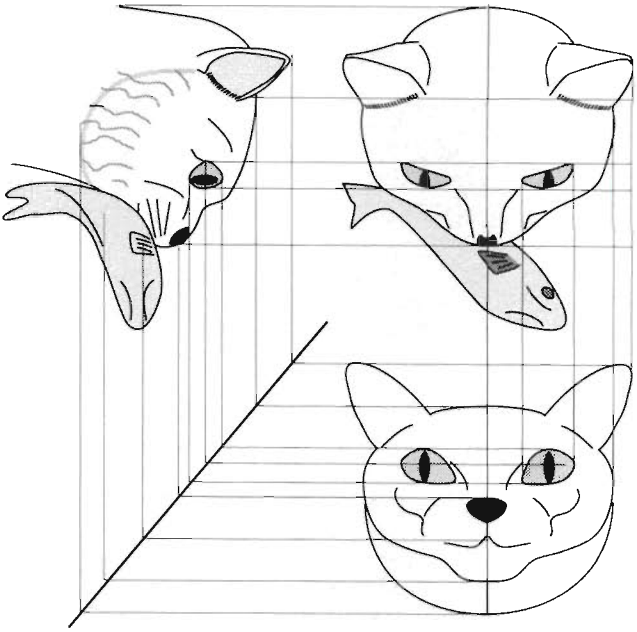


Figure 2. Details of the cat's head

most important part. The value of this style of pattern is that it makes sure that all views are consistent with one another. This is accomplished by the guide lines drawn to each prominent feature. The side and front views are coordinated through the use of a reflection line. The views can then be considered to lie on three sides of a rectangular block. You would do well to first block out the wood to this shape before starting to carve. Then, by first removing the shaded areas as shown in Figure 3, you can get the correct shape of the head. I find that whenever I carve heads of any kind, this method produces the best results. Do the other animals in the same fashion.

Since the cat is in a suspended pose, it is the only one of this set that requires a pole for support. Locate the cat's holding tab behind the pole, and remember to drill a hole for the pole once the wood has been bandsawed and before you begin carving.

The body is textured using a small U-tool to simulate fur. It is useful to shape the cutting edge of this gouge as a bull-nose to give better control in the scooping motion used in texturing. Also, in order to get clean cuts, the tool must be super sharp. Keep it polished on an 8000-grit water stone with strokes parallel to the cutting edge.

Dentzel Giraffe

Our giraffe pattern is of an early version of a Dentzel outside stander which was carved in 1895. It is realistically posed with its head lifted high as though it was about to graze on the leaves of a tall tree. The original giraffe stands approximately six feet tall and is the largest animal on the carousel. It is now in the Charlotte Dinger collection, one of the finest in the country.

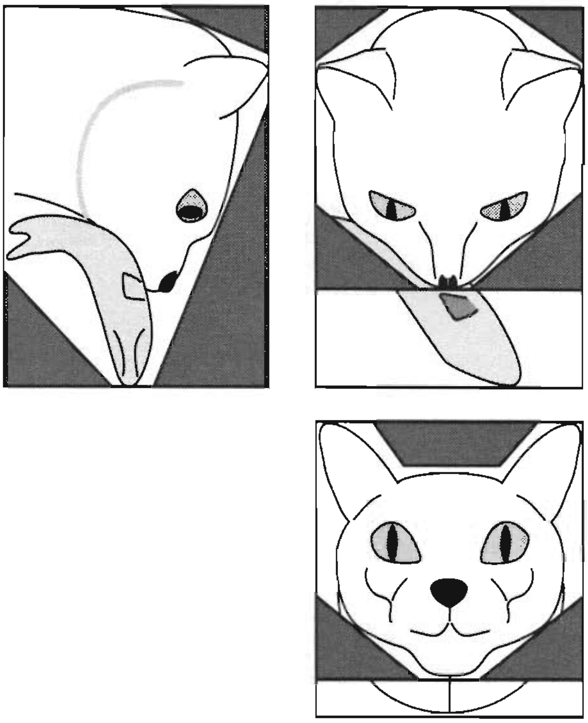


Figure 3. Blocking out the cat's head

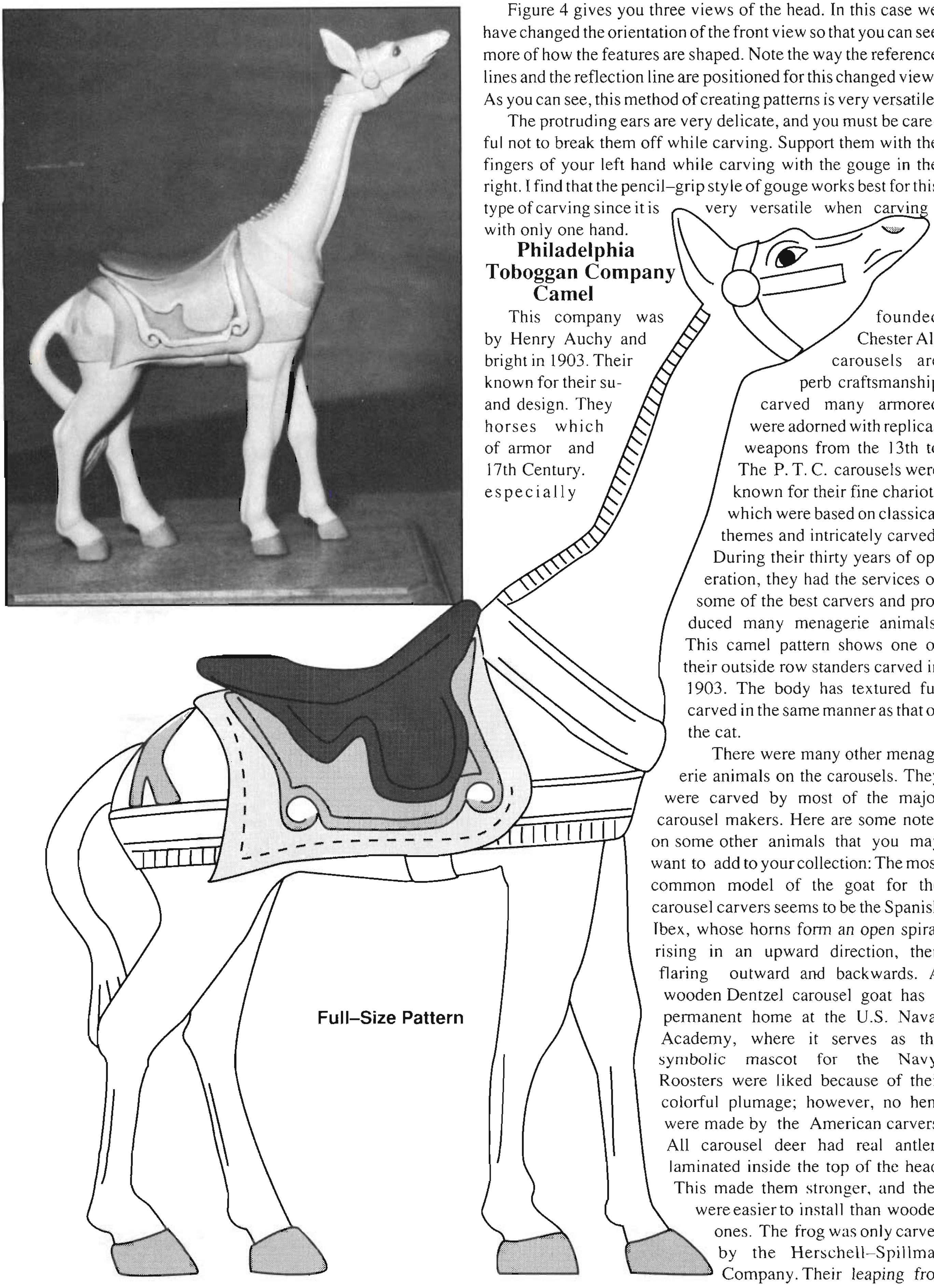
Figure 4 gives you three views of the head. In this case we have changed the orientation of the front view so that you can see more of how the features are shaped. Note the way the reference lines and the reflection line are positioned for this changed view. As you can see, this method of creating patterns is very versatile.

The protruding ears are very delicate, and you must be careful not to break them off while carving. Support them with the fingers of your left hand while carving with the gouge in the right. I find that the pencil–grip style of gouge works best for this type of carving since it is very versatile when carving with only one hand.

Philadelphia Toboggan Company Camel

This company was founded by Henry Auchy and Chester Albright in 1903. Their carousels are known for their superb craftsmanship and design. They carved many armored horses which were adorned with replicas of armor and weapons from the 13th to 17th Century. The P. T. C. carousels were especially known for their fine chariots which were based on classical themes and intricately carved. During their thirty years of operation, they had the services of some of the best carvers and produced many menagerie animals. This camel pattern shows one of their outside row standers carved in 1903. The body has textured fur carved in the same manner as that of the cat.

There were many other menagerie animals on the carousels. They were carved by most of the major carousel makers. Here are some notes on some other animals that you may want to add to your collection: The most common model of the goat for the carousel carvers seems to be the Spanish Ibex, whose horns form an open spiral rising in an upward direction, then flaring outward and backwards. A wooden Dentzel carousel goat has a permanent home at the U.S. Naval Academy, where it serves as the symbolic mascot for the Navy. Roosters were liked because of their colorful plumage; however, no hens were made by the American carvers. All carousel deer had real antlers laminated inside the top of the head. This made them stronger, and they were easier to install than wooden ones. The frog was only carved by the Herschell–Spillman Company. Their leaping frog



Full–Size Pattern

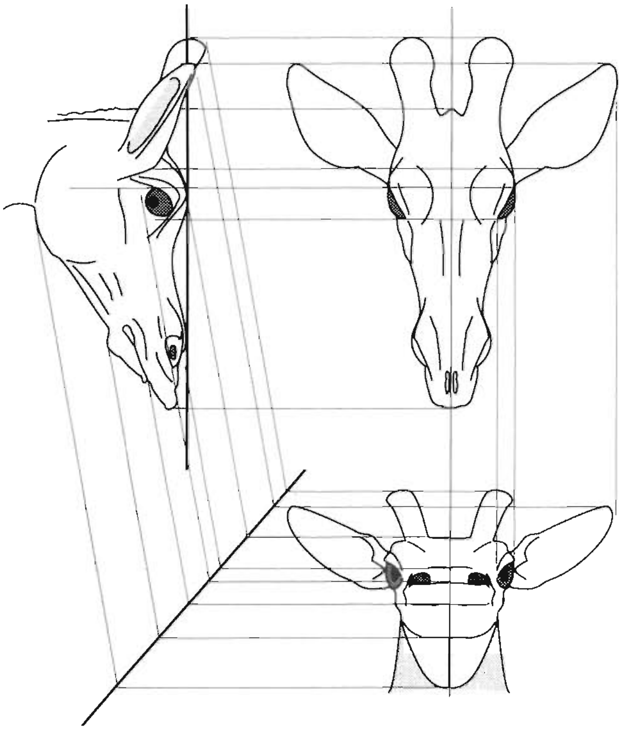
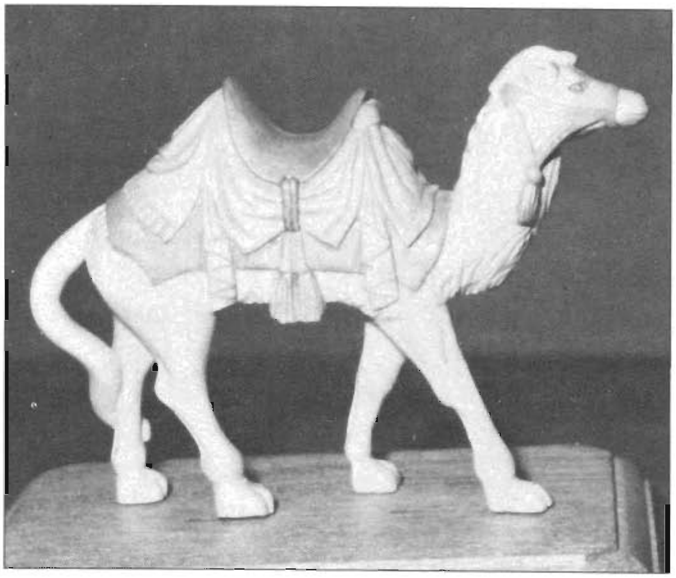


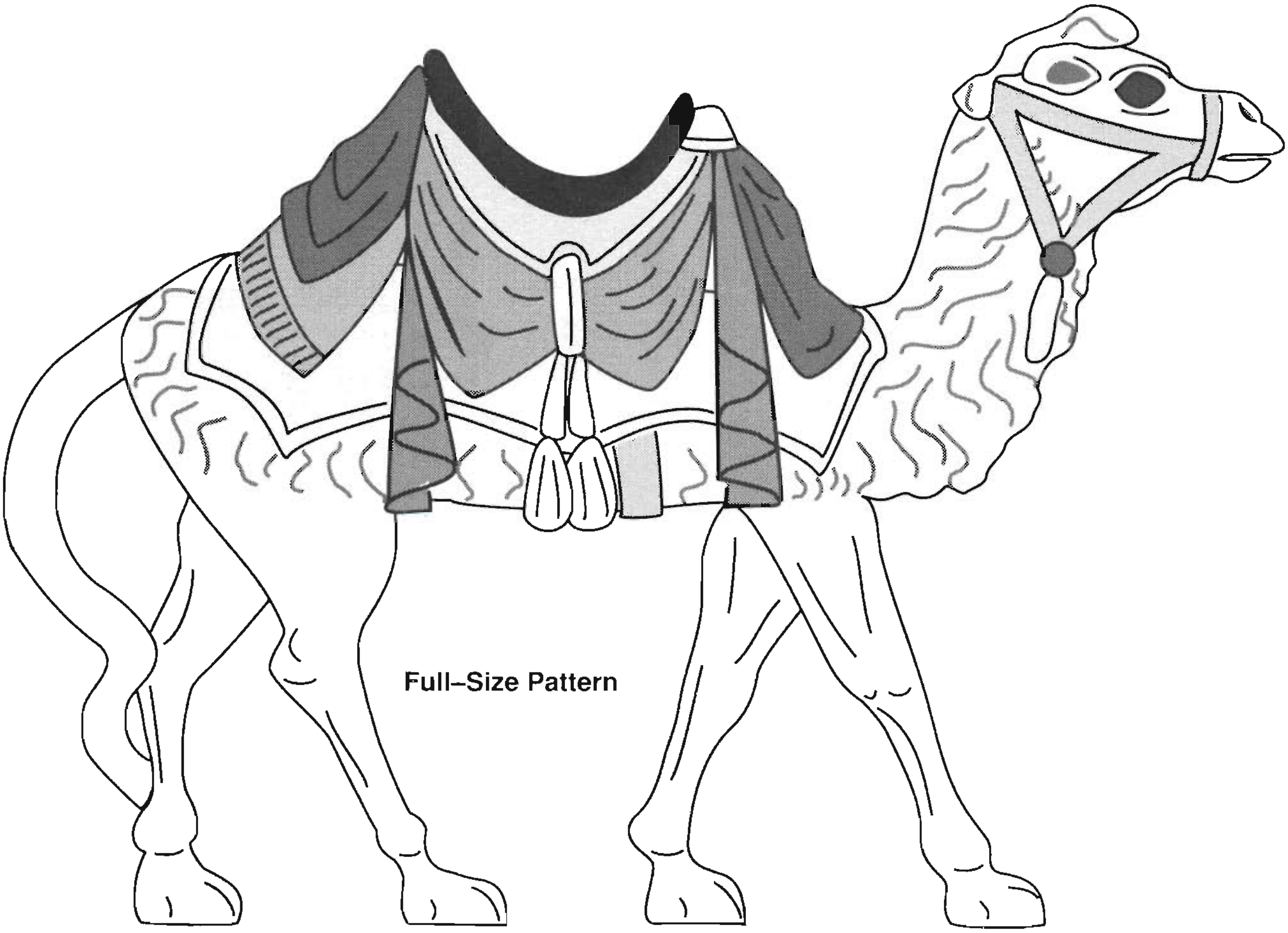
Figure 4. Details of the giraffe's head

photos and illustrations by the author



footman in a bow tie and cutaway was modeled after Sir John Tennet's illustrations for *Alice in Wonderland*. It is the only carousel figure that was carved wearing human style clothing.

With the conclusion of this series of articles on the carving of carousel animals, you should have the beginnings of a nice collection of these wonderful fantasy animals. Learn to use the engineering style of creating patterns and you will have much better results in producing well-proportioned figures. **PW**



A Hand-Rubbed Oil Finish

by Thomas Wisshack

The use of oil on wood is part of an ancient tradition. An oil finish is a good choice for objects which won't be exposed to liquids or getting a lot of hard use. It's an open–pored finish, one that will enhance the color and grain on both traditional and contemporary furniture and develop a beautiful patina over time. I like to think of it as an ongoing, living finish because you can renew it by adding a coat of oil at any time. With each application, it seems to get richer and gain more depth. True, it can take several weeks to produce a good oil finish, but the time and labor pay off in the end with superior results.

To create a hand–rubbed oil finish, begin with a flawless, glass–smooth wood surface—an essential foundation for the coats of oil you will apply later. Begin by removing machine mill marks and other flaws with a sharp cabinet scraper. Don't rely on sandpaper alone to take out the dips and valleys in your work—sandpaper can even make the problem worse. Next, raise the grain of your wood with a sponge dipped in hot water. This forces any imperfections to the surface so that you can more easily sand them off. It also makes your piece less troublesome to repair later, if it comes into contact with water.

When the wood is dry, you're ready to sand. Stock up on 220–, 320– and 400–grit silicon carbide wet–or–dry sandpaper. You'll find that it cuts better, stays sharp longer, and performs the final polishing that ordinary abrasives can't. For large, flat areas attach a piece of 220–grit paper to your orbital sander. For hard to reach spots use a rubber sanding block or a piece of softwood covered with sheet cork, and sand with the grain in long, even strokes. Vacuum your piece before going on to the next grade of abrasive to prevent loose grit from ruining the work. Repeat the process with 320–grit paper to remove the scratches from your previous sanding and begin the polishing action.

In a short time you will notice the grain and color of the wood coming into sharp focus. Further the effect by switching to 400–grit paper. Complete the sanding by burnishing with a worn piece of 400–grit paper. Gently round all sharp corners. Check for imperfections, first with a strong light, then with your fingertips. Your fingers will tell you if your project is ready for finishing.

Although a number of oil finishing products on the market will give you satisfactory results, I encourage you to make your own oil solution. Because the ingredients are so simple and inexpensive, and because the sense of accomplishment in making your own wood finish is so strong, every woodworker should experience it. Begin by mixing three parts

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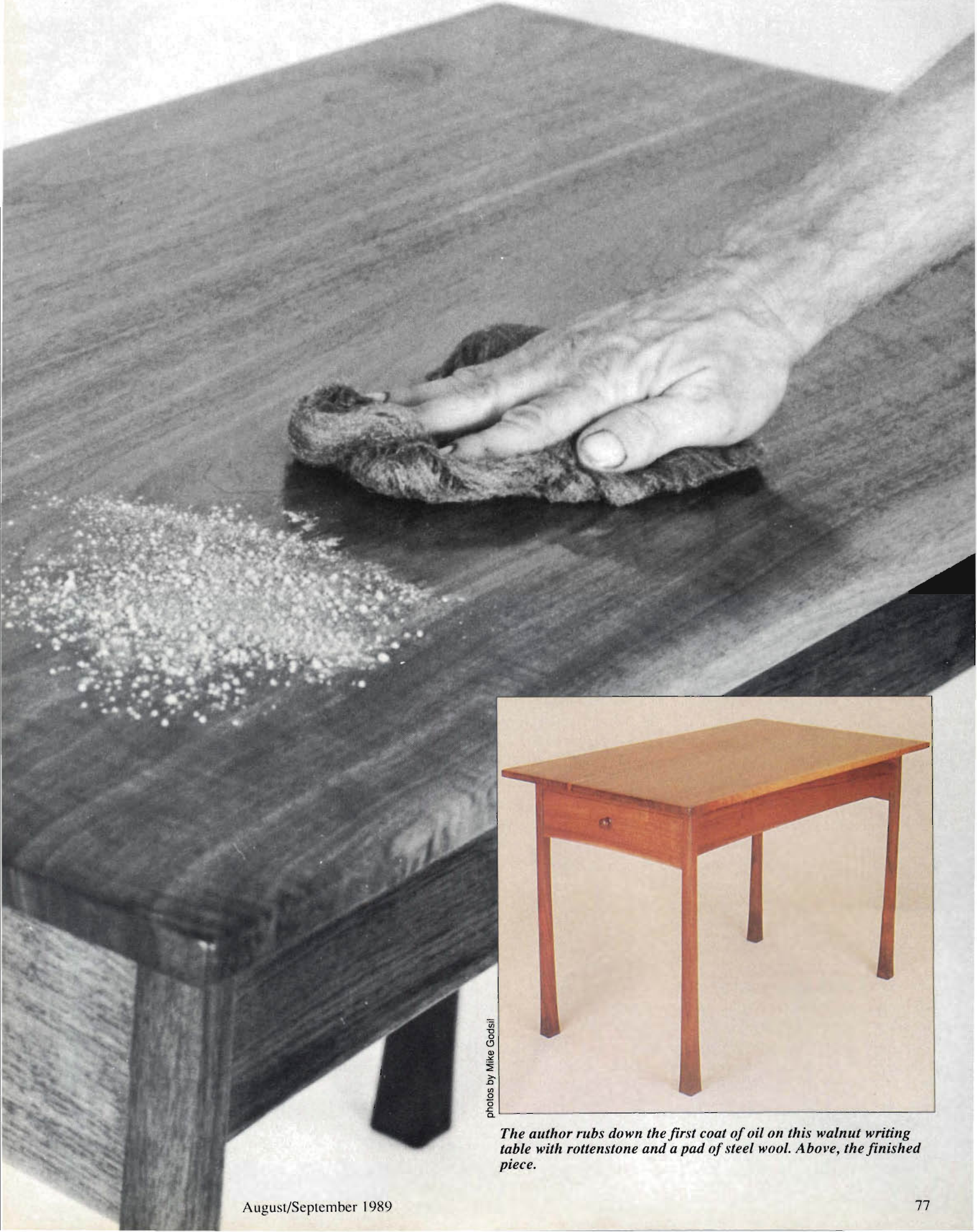
***Thomas Wisshack** is a furniture maker, restorer, and finisher in Galesburg, Illinois.*



photos by Mike Godsil

The author rubs down the first coat of oil on this walnut writing table with rottenstone and a pad of steel wool. Above, the finished piece.

The classic lines of this mahogany lowboy are accentuated by a hand–rubbed oil finish.

photos by Mike Godsil

boiled linseed oil to one part pure mineral spirits. Add a few drops of Japan drier (available at most paint stores), about 5% by volume.

For the first coat, get maximum penetration by warming the jar of oil in a double boiler or electric gluepot containing about an inch of water. With oil, you needn't worry about absolutely dust–proof conditions. Flow on a liberal amount with a natural bristle brush. Cover each area quickly to avoid uneven absorption, and work the oil into the pores of the wood. Let it soak in for twenty or thirty minutes and then sprinkle the surface with rottenstone abrasive powder. Give your project a vigorous rub with a piece of burlap or some steel wool. Be sure to work with the grain of the wood, since the burlap and rottenstone can leave fine scratches if used carelessly. Put plenty of energy into rubbing down your first coat of oil—it should provide a glass–smooth foundation for the remaining applications. Remove all traces of oil from your work with soft rags and dispose of these highly flammable items immediately, preferably by submerging them in water and removing them from the shop.

There are vast differences of opinion on how long to let an oil finish dry between coats; overnight seems to be the minimum, and two weeks the maximum drying time used by various finishers. I prefer waiting from one to two weeks between coats because a shorter drying time leaves a greasy look to the wood, especially after many coats. With oil, you're not just letting the coats dry, but beginning the process of curing—hardening the finish. When matching antique pieces, I wait an especially long time between coats in order to impart a hard, cured shine that matches the old finish.

You can adjust the drying time by adding Japan drier to your oil solution. The drier not only forces the evaporation of the mineral spirits, but it forces the evaporation of the oil as well. Even if you choose to use one of the commercial oil finishes, try experimenting with small amounts of drier to be absolutely certain it will dry properly. In this way you safeguard against unforeseen changes in humidity and peculiarities in whatever wood you are working with. In short, you want to obtain a tough film of oil in the shortest time possible.

For the second coat use a brush as before, but skip the burlap and rottenstone and simply wipe the surplus off with rags. After another waiting period, add a third coat by simply dipping a soft rag in the oil solution, applying it and wiping off the surplus. In time you will get a feeling for how many coats it will take to get the look you want on your project. The beauty of oil is that there is no limit to the number of coats you can apply, and if done properly, each will give your work more depth than the last. At the very minimum, I suggest you apply four coats. The lowboy in the photo above was finished using six coats of oil.

One reason why oil finishes appeal to so many craftsmen is that there is no thick accumulation of varnish or lacquer to scratch and chip off. When a spill or minor scratch does occur, it can usually be repaired simply by dipping a pad of 0000 steel wool into the oil solution and rubbing out the damaged area. For slightly heavier damage, "wet–sanding" with a worn piece of 400–grit silicon carbide paper usually does the trick. Remember that the surface of your piece will change color in time, so use this last suggestion with some caution—don't sand too deeply and reveal the inner color of the wood. In the photo at the beginning of this article, the top of a walnut writing table is being revived with a pad of steel wool dipped in oil. Adding a small amount of rottenstone powder will make a paste to help restore the original sheen. **PW**

Egg Cup

by John A. Nelson

Although this egg cup is a simple turning project, it makes a great gift for those who have hand–crafted decorative eggs to display, or for those who just like to eat their hard–boiled eggs in style. It's turned from a solid piece of hardwood two inches in diameter and about four inches long. Any nice piece of hardwood will do, like the spalted maple I used. Its fungi–induced markings provide interesting and unusual detail beyond the maple's classically simple grain pattern.

Secure the block to a turning plate by first gluing it to a piece of scrap wood that is about 3" in diameter. For easy separation later, insert a piece of paper between the glue surfaces, or use a hot glue gun to join the block and the scrap. After turning the outside surface to shape, carefully cut out the interior shape. A safe and easy way to begin is by drilling a 1" diameter hole about 1" deep. Then start with the outside wall of the hole you've drilled and work your way outward. To get the exact size and shape of the interior space, you might want to use a large egg or, if the cup is for display, whatever you plan to put in it.

Sand the cup all over with a fine sandpaper and finish it with two or more coats of a satin varnish. Finally, cut a piece of felt to size and glue it to the bottom of the cup. Now find an egg—and don't forget to hard boil it! PW

***John A. Nelson** is the author of numerous books and a Contributing Editor to* Popular Woodworking.

photo by Deborah Porter

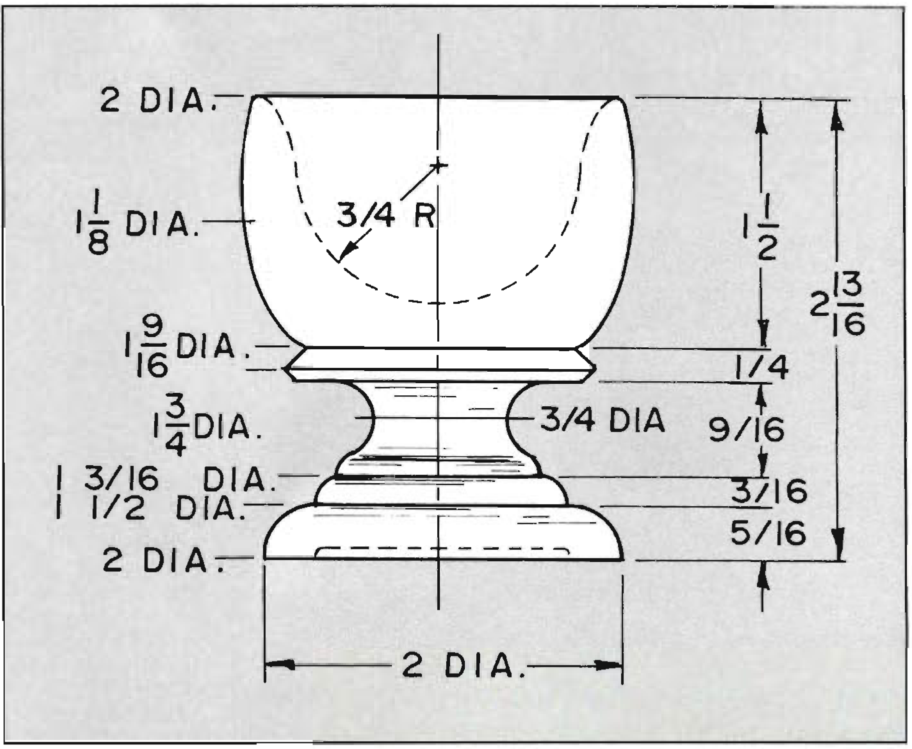


illustration by the author

Calendar

Events of Interest to Woodworkers

If your group is having an event you would like other woodworkers to hear about, please send us all pertinent information at least three months before the opening date. We will publish it for you in **Calendar** free of charge.

California

Date: August 9-13
Event: The Pacific States Craft Fair
Location: Fort Mason Center, Bay & Laguna Streets, San Francisco

Three hundred artists, new and established, all producing high quality handmade crafts, have been selected for exhibition. All media including clay, basketry, fiber, jewelry, metal, mixed media, paper and wood, will be on display.
For information, contact: American Craft Enterprises, Inc., P. O. Box 10, 256 Main Street, New Paltz, NY 12561. Tel. (914) 255-0039.

Date: August 25-October 29
Event: Artistry in Wood '89
Location: Sonoma County Museum, 425 Seventh Street, Santa Rosa

This annual juried show presented by The Sonoma County Woodworkers Association features work by leading amateur and professional woodworkers in Sonoma County, and includes weekend demonstrations of various aspects of woodworking.
For information, contact: Eric Nelson, Museum Curator, at (707) 579-1500, or Thomas Stockton, Show Chairman, (707) 795-8618.

Date: October 2-6
Event: A five-day relief carving workshop with William H. McMaster
Location: Lighthouse Art Center, 575 US Highway 101 S., Crescent City

Techniques covered include creating an illusion of depth through foreshortening and the illusion of distance through depth perspective. The class will emphasize advanced design techniques.
For information, contact: the Lighthouse Art Center, 575 US Highway 101 S., Crescent City, CA 95531. Tel. (707) 464-4137.

Date: October 6-8
Event: Northern California Woodworking/Home Improvement Show
Location: Cow Palace, Geneva Avenue & Santos Street, Daly City

Machinery, tools, supplies, demonstrations and workshops for beginning, advanced and professional woodworkers, turners, carvers, homebuilders and remodelers.
For information, contact: Michelle Troop, 1516 South Pontius Avenue, Los Angeles, CA 90025. Tel. (213) 477-8521 or 1-800-826-8257.

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Sept. 8-9-10	Greater Cincinnati	Cincinnati Convention Center
Sept. 15-16-17	Twin Cities	St. Paul Civic Center
Sept. 22-23-24	*Metro-Detroit	Cobo Hall, Detroit
Sept. 29 - Oct. 1	Western Washington	Seattle Center
Oct. 6-7-8	*No. California	Cow Palace, San Francisco
Oct. 13-14-15	Baltimore/Washington	Festival Hall, Baltimore
Oct. 20-21-22	Pittsburgh Tri-State	Pittsburgh ExpoMart, Monroeville
Oct. 27-28-29	Central Florida	Curtis Hixon Conv. Ctr., Tampa
Nov. 3-4-5	Oregon	Portland Memorial Coliseum
Nov. 10-11-12	So. California	Los Angeles County Fairgrounds
Nov. 17-18-19	San Diego	Convention & Perf. Arts Center
Dec. 1-2-3	Delaware Valley	Garden State Park, New Jersey

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Connecticut

Date: August 18-20
Event: Summer Crafts Festival
Location: Berlin Fairgrounds, Berlin

All shows are juried, with 200 to 250 exhibitors and 15,000 to 25,000 public attendance per show. Indoor ($180) and outdoor ($200) spaces available. Submit five product slides and one booth display.
For information, contact: Arts & Crafts Festivals, P. O. Box 412, Canton, CT 06019. Tel. (203) 693-6335.

Illinois

Date: October 6-8
Event: Woodworking World
Location: Metro Center, Rockford

Close to "Little Switzerland," an early immigrant settlement, the show will include demonstrations of Swiss chip carving and Swiss cabinetry teaching techniques.
For information, contact: Woodworking Association of North America, P. O. Box 706, Plymouth, NH 03264. Tel. 1-800-521-7623 (Monday-Thursday) or (603) 536-3768.

Maryland

Date: October 13-15
Event: The Baltimore/Washington Woodworking Show
Location: Festival Hall, 1 West Pratt Street, Baltimore

Machinery, tools, supplies, demonstrations and workshops for beginning, advanced and professional woodworkers, turners, carvers, homebuilders and remodelers.
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Massachusetts

Date: September & October
Event: One-week workshops in House Renovation (September 11-15), Finish Carpentry (September 18-22) and Cabinetmaking (October 2-6)
Location: Heartwood School, Johnson Hill Road, Washington
For information, contact: the Heartwood School, Johnson Hill Road, Washington, MA 01235. Tel. (413) 623-6677.

Date: September 22 Deadline
Event: Woodturners of the Northeast 1990
Location: Worcester Center for Crafts, 25 Sagamore Road, Worcester

The Center for Crafts and the Central New England Chapter of the American Association of Woodturners invite turners from the northeastern states to apply for entry to an exhibition. Juried by Vermont turners Alan Stirt and Michelle Holzapfel, the show will be on view at the Worcester Center for Crafts from February 10, 1990, through March 17, 1990, when it will travel the rest of the year to galleries and museums throughout the country. Entrants will be notified of acceptance by November 6.
For information, contact: The Worcester Center for Crafts, 25 Sagamore Road, Worcester, MA 01605. Tel. (508) 753-8183.

Michigan

Date: September 22-24
Event: The Metro-Detroit Woodworking/Home Improvement Show
Location: Cobo Hall, 1 Washington Blvd., Detroit

Machinery, tools, supplies, demonstrations and workshops for beginning, advanced and professional woodworkers, turners, carvers, homebuilders and remodelers.
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Minnesota

Date: August 13-19
Event: Sixth Annual Villa Maria Woodcarving Workshop
Location: Frontenac

Classes planned include caricature carving, relief carving, stylized carving, songbird & waterfowl carving, carousel horse & fish carving, and marquetry. Classes will be available for experienced and beginning carvers.
For information, contact: Villa Maria Workshop, P. O. Box 37051, Minneapolis, MN 55431.

Date: September 15-17
Event: The Twin Cities Woodworking Show
Location: St. Paul Civic Center, 143 West Fourth Street, St. Paul

Machinery, tools, supplies, demonstrations and workshops for beginning, advanced and professional woodworkers, turners, carvers, homebuilders and remodelers.
For information, contact: Helen Fillman, 1516 South Pontius Avenue, Los Angeles, CA 90025. Tel. (213) 477-8521 or 1-800-826-8257.

North Carolina

Date: September 22-24
Event: Woodworking World
Location: M. C. Benton Convention Center, Winston-Salem

The show will include router master Brad Witt who will share his knowledge and techniques.
For information, contact: Woodworking Association of North America, P. O. Box 706, Plymouth, NH 03264. Tel. 1-800-521-7623 (Monday-Thursday) or (603) 536-3768.

Ohio

Date: September 8-10

Event: The Greater Cincinnati Woodworking Show
Location: Cincinnati Convention Center, 525 Elm Street, Cincinnati

Machinery, tools, supplies, demonstrations and workshops for beginning, advanced and professional woodworkers, turners, carvers, homebuilders and remodelers.
For information, contact: Michelle Troop, 1516 South Pontius Avenue, Los Angeles, CA 90025. Tel. (213) 477-8521 or 1-800-826-8257.

Oregon

Date: October 15
Event: A seminar in Precision Woodworking on a Small Scale
Location: Oregon School of Arts and Crafts, 8245 SW Barnes Road, Portland

The instructor will be Ken Altman and the fee is $33.
For information, contact: Becky Banyas, Oregon School of Arts and Crafts, 8245 SW Barnes Road, Portland, OR 97225. Tel. (503) 297-5544.

Pennsylvania

Date: October 20-22
Event: The Pittsburgh Tri-State Woodworking Show
Location: Pittsburgh ExpoMart, 105 Mall Blvd., Monroeville

Machinery, tools, supplies, demonstrations and workshops for beginning, advanced and professional woodworkers, turners, carvers, homebuilders and remodelers.
For information, contact: Michelle Troop, 1516 South Pontius Avenue, Los Angeles, CA 90025. Tel. (213) 477-8521 or 1-800-826-8257.

Tennessee

Date: September 9
Event: One-day seminar on small dry kiln technology
Location: Log Home Guide Information Center, Cosby

Air-drying, kiln types, and kiln drying techniques will be presented by technical experts, and should be of special interest to people interested in drying from 1 to 5,000 board feet of lumber per month. Jointly sponsored by the Tennessee Valley Authority, Tennessee Valley Dry Kiln Association, and *Log Home Guide* magazine.
For information, contact: Bill Parrish, TVA Forestry Building, Norris, TN 37828. Tel. (615) 632-1656.

Vermont

Date: August 19
Event: The Sixteenth Annual Wood Carvers Exhibit
Location: Peoples Academy Gymnasium in Morrisville

Exhibits, sales and carving demonstrations will run from 9 am to 4:30 pm.
For information, contact: C. A. Brown, Exhibit Coordinator, P. O. Box 268, R. F. D. 1, Waterville, VT 05492. Tel. (802) 644-5039.

Washington

Date: August 3-September 3
Event: Dark Dancers
Location: Northwest Gallery of Fine Woodworking, 202 First Avenue South, Seattle

New works in exotic woods by Jonathan Cohen will be showcased.
For information, contact: Cheryl Peterson, 202 First Avenue South, Seattle, WA 98104. Tel. (206) 625-0542.

Date: August 12-13
Event: Artwood exhibition and demonstration
Location: Artwood, 1000 Harris Avenue, Bellingham

Artwood, a co-op gallery of woodworkers, will display fine furniture and accessories of textiles, glass, ceramics and painting. On August 12, Vernon Leibrant will demonstrate lathe turning.
For information, contact: Artwood, 1000 Harris Avenue, Bellingham, WA 98225. Tel. (206) 647-1628.

Date: September 2
Event: Artwood exhibition and demonstration
Location: Artwood, 1000 Harris Avenue, Bellingham

Artwood will display fine furniture and accessories of textiles, glass, ceramics and painting. On August 12, Len Zeoli will demonstrate lathe turning.
For information, contact: Artwood, 1000 Harris Avenue, Bellingham, WA 98225. Tel. (206) 647-1628.

Date: September 7-October 1
Event: The Art of Chairmaking
Location: Northwest Gallery of Fine Woodworking, 202 First Avenue South, Seattle

Chairs by Northwest woodworkers will be displayed.
For information, contact: Cheryl Peterson, 202 First Avenue South, Seattle, WA 98104. Tel. (206) 625-0542.

Date: September 29-October 1
Event: The Western Washington Woodworking Show
Location: Seattle Center Coliseum, 305 Harrison Street, Seattle

Machinery, tools, supplies, demonstrations and workshops for beginning, advanced and professional woodworkers, turners, carvers, homebuilders and remodelers.
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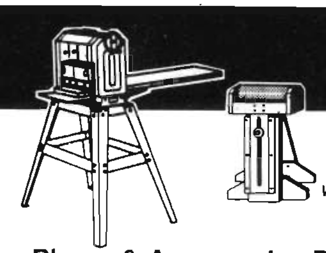
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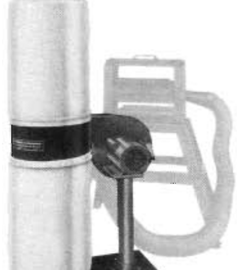

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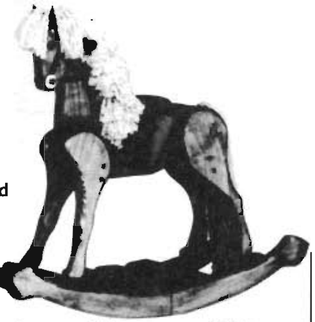

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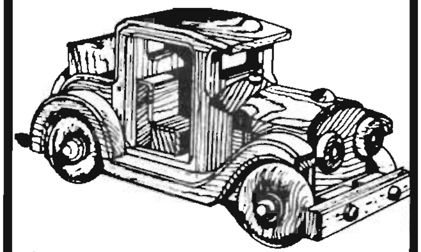

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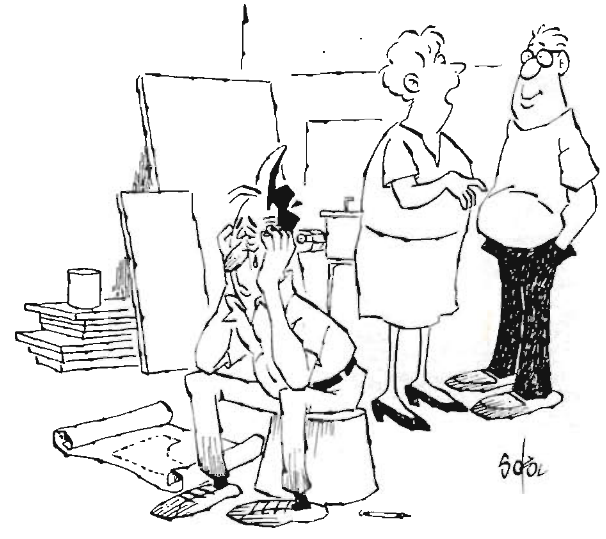

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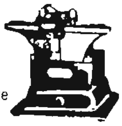

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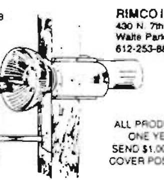

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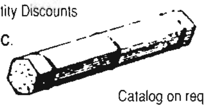

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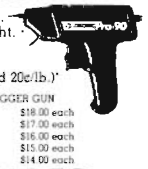

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Out of the Woodwork

by Jeff Taylor

The Caffeine Machine

So much to do, so much to do...

My wife's in town, shopping. I'm on my own, with the blahs closing in. Looking at all the projects underway in the vast jumble of my shop, I despair; the enormity of the work ahead makes me tired. That chair can be unclamped; after a week, the glue's surely dry. No wonder our house looks so empty; the darn furniture must all be out here, under construction or repair. The floor needs sweeping. A lot of the tools bestrewn on benches could use a good putting–away, too.

But you know how it is; sunny weather is the mother of procrastination. And to me, getting things done is only a byproduct of doing them enjoyably; I try to balance accomplishment with relaxation. When I'm in puttering mode, I usually put peaceful classical music on the tapedeck.

Today, it looks like we'll have to pick up the pace with some coffee. In my youth, an old, wise woodworker once admitted, "I always take a full pot of coffee out to the shop." A full *pot* ? I marveled then. Why, you'd twang like a banjo. "No, you need that much when you get older," he laughed. "Wait. You'll find out."

He was right. My tolerance for caffeine is still low, but a lot higher than when I was a kid. Putting away three cups of coffee no longer makes me want to party all night and go drag racing. I *need* three cups, every morning, just to come fully awake. As my mind starts to wander and my body breaks down, I'll need five cups just to pull me out of the rocking chair. I'll be 40 any year now.

Another wearisome fact comes to mind: our old plastic coffee maker gurgled and died yesterday, unable to get the water up to a boil. In human years, it was probably my age.

I rummage through the cupboards. After some searching, I run across our old espresso machine. What was that old expression?—*Far out, man.*

Now *this* brings back memories: Driving home after class in my old Volkswagen starship, after a few tiny cups of espresso; my highly caffeinated years as a carpenter, leading to my job in a giant homebuilding corporation, and mornings sipping the scalding black juice before the commute in the BMW; and, after the birth of our first child, those family picnics in our Honda Civic, with a little Thermos® bottle of espresso on the seat. Back then, we always seemed to be drinking it and going somewhere.

My decision to stop rat–racing and earn a bare subsistence as a woodworker/writer changed all that. We put away the espresso machine and bought an old pickup. Life is slower and simpler now, in my sunset years. Ah, yesterdays.

It takes a long time to make even a small pot of espresso. But I can't find those ridiculously teensy cups. Out in the shop, I fill my trusty old china mug with the bitter ebony syrup and take a few slugs as I work.

The infinite number of jobs quickly dwindles to a few thousand. In fact, after the second cup, Bizet and Beethoven ooze out of the speakers like clabbered varnish. So I slap in a different tape; something loud, hard, and thumpy by Mick Jagger—at full volume.

My hands start to move in a blur, planing, sanding, staining, organizing, and grinding blades to the music. Boomboomboom, wuggah...

After my wife drives up, I hear her go in the shop, calling my name. She comes in the house to find me resting in a couch–coma, but still popeyed and twitching.

"Gosh, you're ambitious!" she exclaims. "I've never seen your shop so clean! And look at our furniture! Inside the house, yet! Thanks, honey. You must be tired." She bestows a well–done–my–hero kiss on my sweaty forehead.

My eyes whip up, and I start talking in a fast staccato. "Tired? Tired? Nope, just getting warmed up. Got a lot done, all right, for sure; every tool cleaned, oiled, sharpened, and hung up, too. Hey, let me take a quick shower, and we'll go out for supper, a splatter movie, and maybe some dancing, OK?" I snap erect, bones creaking, ready to boogie. The caffeine should burn off by tomorrow morning. **PW**

Jeff Taylor continues to earn a bare subsistence as a woodworker/writer in Burnt Woods, OR.

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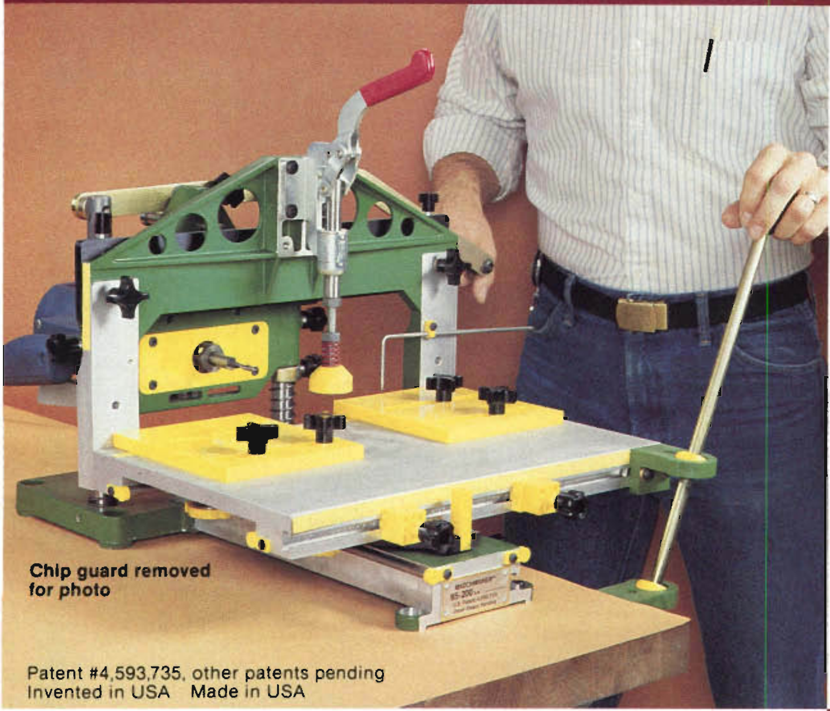
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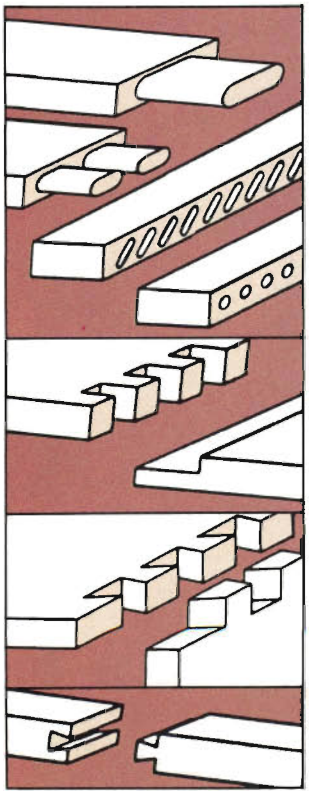

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Spindle RPM: determined by router used
Drive: Bosch, Ryobi, Makita or Hitachi 2¼ to 3 HP plunge routers
Vertical travel: 6"
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